Alberta Treasury Board and Finance

BULLETIN

BULLETIN NUMBER: **04-2016**

TITLE: **ALBERTA STANDARD AUTOMOBILE INSURANCE POLICY FORM - TRANSPORTATION NETWORK S.P.F. No. 9**

DATE: **June 28, 2016**

A. PURPOSE

The purpose of this Bulletin is to provide information about a new standard automobile insurance policy form named the Alberta Standard Automobile Form – Transportation Network S.P.F. No. 9 ("SPF9") approved for use in Alberta effective July 1, 2016. The SPF9 provides automobile insurance for Transportation Network Companies ("TNC"), and their authorized TNC drivers. The SPF9 is approved pursuant to section 551(3) of the Alberta *Insurance Act* ("Act") and is not an 'owner's policy' as this term is defined in the Act. Accordingly, not all provisions of Subpart 2 – Automobile Insurance of the Act will apply to the SPF9. A copy of the SPF9, including a declaration page and TNC Insurance Information Form, is available on our website.

B. COVERAGE SUMMARY

Use period of the vehicle	SPF9 policy coverages	Report claim to
Period 0: Personal use; driver is not logged onto a TNC network for the purpose of providing transportation services.	None	Only driver's own insurer

Superintendent of Insurance

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Period 1: Driver has logged onto a TNC network for the purpose of providing transportation services but has not accepted a ride request.	• $1,000,000 third party liability. This coverage is contingent on driver's own insurer denying coverage for an accident occurring during this Period. • Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations. • No physical damage coverage (e.g. collision).	Both TNC insurer and driver's own insurer
Period 2: Driver has accepted a ride request and is en route to pick up passenger(s).	• Third party liability coverage. • Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations. • Optional physical damage coverage (e.g. collision).	Only TNC insurer
Period 3: Passenger(s) are in the vehicle, being transported, and ending when the last passenger departs from the vehicle.	• Third party liability coverage. • Statutory accident benefits as provided for in the Automobile Accident Insurance Benefits Regulations. • Optional physical damage coverage (e.g. collision).	Only TNC insurer

C. INFORMATION FOR CONSUMERS USING TNC SERVICES

The SPF9 only provides insurance coverage for rides that have been booked electronically using the TNC application. It provides no insurance coverage when passengers have street-hailed a ride.

Even though the SPF9 is approved for use in Alberta, it does not mean that a TNC has actually purchased this policy. Before using the services of a particular TNC, be sure to confirm that the TNC and its drivers have appropriate insurance. There are various places you can confirm this information:

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- Check whether the TNC is properly licenced. In some municipalities, such as Edmonton and Calgary, a TNC and their driver must provide proof of appropriate automobile insurance to be licensed to operate in the municipality.
- Review a TNC's insurance policy on the TNC's website. The Superintendent of Insurance has asked TNCs to ensure their automobile insurance policy is made available for public viewing.
- An insurance company that issues the SPF9 must ensure that a TNC Insurance Information Form is provided to all drivers. You may ask the driver to show you this form, which is permitted to be displayed electronically. For more information on this form, please see section 'G' of this bulletin.
- In addition, the TNC may provide a copy of its automobile insurance policy to its authorized drivers, via the driver's smartphone application, for review by passengers.

D. INFORMATION FOR TNC DRIVERS

If the TNC you drive for has purchased the SPF9, you are not covered while carrying street-hailed passengers or if you are transporting cargo. You are only covered for periods when you are using your vehicle for TNC operations as defined in the SPF9. As described in the Coverage Summary chart found in section 'B' of this Bulletin, coverage is more restrictive during Period 1 when you are logged into a TNC network for the purpose of providing transportation services but have not yet accepted a ride request.

DO NOT assume that your own personal automobile insurance policy will automatically cover you when the SPF9 does not. You are contractually obligated to notify your personal insurance company that you are a TNC driver. Your personal insurance company may decide to charge an additional premium and continue insuring you, or, as is permitted, may decide to terminate your policy. To locate an insurance company who may accommodate you using your vehicle for TNC driving, please contact your insurance broker or agent.

E. INFORMATION FOR TNCs

The SPF9 is designed to provide coverage only during the time a vehicle is used as a TNC automobile. It also can provide coverage for physical damage to TNC vehicles, should the insurer offer it, and should a TNC choose to purchase it. To purchase the SPF9, please check with your insurance broker. Insurers are not obligated to offer the SPF9; however, if they do, they are expected to meet the minimums set out in the *Traffic Safety Act*, the *Insurance Act,* and their associated regulations. If you have purchased the SPF9, the Superintendent of Insurance expects that you will ensure a

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copy of your SPF9 is available for public view on your website. Because there are coverage limitations, be sure to communicate these limitations to your TNC drivers, so they may take steps to ensure they have arranged insurance for the period when the coverage limitations apply (see chart above). In a claims coverage investigation or for underwriting purposes, it is expected that a TNC and its insurer will cooperate with other insurers to facilitate the exchange of information, including the dates, times and circumstances of an accident involving a TNC driver and the precise times that the TNC driver logged in and was logged out of the TNC's digital platform. The SPF9 is not the only way to appropriately insure TNC automobiles, and depending on how the TNC is structured, other approved automobile insurance forms may be appropriate. Please discuss these with your insurance broker.

F. INFORMATION FOR INSURANCE COMPANIES AND INSURANCE BROKERS

This SPF9 is now available for use in Alberta. There is also an approved standard application form (SAF9) for TNCs to use when applying for the SPF9. The SAF9 can be found on our website. Fleet rating programs may be used with the SPF9. Insurers should contact the Automobile Insurance Rate Board to determine if they need approval for premiums associated with this policy form. The SPF9 contingent coverage for Period 1 provides for $1,000,000 third party liability coverage.

The following standard endorsement forms are approved for use with the SPF9:

1. SEF#44 Family Protection Endorsement
2. SEF#23a Mortgage endorsement
3. SEF#21a & 21b Blanket basis fleet endorsements
4. SEF#13D limited glass
5. SEF#13H hail deletion
6. SEF#20 loss of use
7. SEF#43R&L limited waiver of depreciation

In a claims coverage investigation, the Superintendent of Insurance expects a TNC insurer will cooperate with other insurers involved in the claims coverage investigation to facilitate the exchange of information, including the dates, times and circumstances of an accident involving a TNC driver and the precise times that the TNC driver was logged in and was logged out of the TNC's digital platform.

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G. TNC INSURANCE INFORMATION FORM

The SPF9 is not an 'owner's policy,' and as such the TNC insurer is not obligated to provide a Financial Responsibility Card (pink card). Instead, included on page two of the SPF9 (reproduced in Appendix 1 below), the Superintendent of Insurance has stipulated the minimum information which insurers must provide to insured TNC drivers either directly or through the TNC. This form is not intended to replace the driver's own pink card: each driver should have both a pink card for the vehicle owner's policy, and a TNC Insurance Information Form for the TNC policy. The SPF9 TNC Insurance Information Form is permitted to be in electronic or paper form. The driver is expected to provide this form to all claimants and potential claimants for all accidents occurring during Periods 1, 2, and 3. Because the personal automobile insurance of TNC drivers provides coverage when TNC drivers are not using their vehicles for TNC operations, in the event of an accident that occurs during such a period, TNC drivers must still produce their financial responsibility card to any peace officer, witnesses or anyone sustaining loss or injury.

If you have any questions about this Bulletin, please contact one of our compliance officers at 780-643-2237, or by email at tbf.insurance@gov.ab.ca.

[ORIGINAL SIGNED]

Ms. Nilam Jetha
Superintendent of Insurance

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Appendix #1: TNC Insurance Information Form

Alberta SPF9 TNC Insurance Information Form

Name of insured: _____

Name of insured driver: _____

Name of Insurer: _____

Insurer Alberta address: _____

Policy #: _____

Effective date: _____

Expiration date: _____

Authorized vehicle year, make, model: _____

To report a claim directly to the insurer:
By Phone: _____
By Email: _____
By regular mail: _____

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A.M. Best Company, Inc., A.M. Best Methodology,
"Understanding BCAR For Canadian Property/Casualty Insurers,"
July 23, 2020, pp. 1-9 (up to Section C), 21-29 (B5 Reserve Risk and B6 Premiums Risk), 30-31 (B8 Catastrophe Risk) only.

Candidates may also study from the previous July 13, 2018, version of the paper.

A.M. Best Company, Inc., A.M. Best Methodology

"Catastrophe Analysis in A.M. Best Ratings,"
October 13, 2017

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AMERICAN ACADEMY of ACTUARIES

NAIC PUBLIC HEARING ON CREDIT-BASED INSURANCE SCORES

APRIL 30, 2009

My name is Jeff Kucera. I am here today representing the Casualty Practice Council of the American Academy of Actuaries.[1] I am employed as a senior consultant with EMB America LLC, an actuarial consulting firm. I am a fellow of the Casualty Actuarial Society and a member of the American Academy of Actuaries. I will be addressing actuarial practice applicable to risk classification and specifically, the use of credit-based insurance scores for rating and underwriting purposes. I am also here to offer the assistance of the Casualty Practice Council in your continued exploration of credit-based insurance scores.

In particular, my comments will demonstrate that the use of credit-based insurance scores allows the insurer to better segment insurance risks for the purpose of charging appropriate rates. I will address the following items:

- Current economic circumstances;
- Definition of what constitutes a credit-based insurance score;
- Evaluation of how insurers use credit-based insurance scores; and
- Discussion of how current economic conditions have affected policyholder premiums related to credit-based insurance scores.

Most companies now use credit-based insurance scores in the rating of personal lines such as private-passenger automobile or homeowners' insurance. The use of credit-based insurance scores helps insurance companies charge those risks that are likely to generate greater costs higher premiums, while those likely to generate lower costs get lower premiums. The removal of such insurance scores will not lower overall insurance premium; rather, it will redistribute the premium charges so that those risks with lower expected costs will pay more than is actuarially fair, while those with greater expected costs will pay less than is actuarially fair.

[1] The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Current Economic Circumstances

As we are all aware, the United States is suffering from a major economic crisis, which has imposed considerable hardship on both individuals and businesses. A significant aspect of the current economic crisis is the severe tightening of the credit markets. This may suggest that credit standards are being tightened by banks and other sources of commercial credit. This comes at a time when increasing numbers of Americans are experiencing loss of income, including decreases in the value of many of their assets and unemployment. These problems are significant and ongoing, and they raise questions regarding the use of credit rating in insurance. These issues span multiple lines of insurance, but for individuals, they have the greatest impact on private-passenger auto and homeowners' insurance.

The American Academy of Actuaries is the public policy organization for actuaries practicing in all specialties within the United States. A major purpose of the Academy is to act as the voice of the profession on public policy issues. The Academy regularly prepares testimony for Congress, provides information to federal elected officials, comments on proposed federal regulations, and works closely with state officials on issues related to insurance.

The purpose of my presentation on behalf of the Casualty Practice Council today is to assist the NAIC in its analysis of these questions and to offer to work with the NAIC in its continuing study of these issues. The Casualty Practice Council has a history of working with the NAIC on this and many other topics. In fact, the Risk Classification Subcommittee of the Academy's Products, Pricing, and Market Committee presented the NAIC with a report, "The Use of Credit History for Personal Lines of Insurance,"[2] in November 2002, which is still relevant today.

The NAIC has identified three issues to serve as a basis for discussion. Our comments will provide an actuarial context for each of these issues.

Definition of What Constitutes a Credit-Based Insurance Score

An insurance score is a numerical score or ranking assigned to an insurance risk (i.e., a prospective insured) based on that risk's underlying characteristics. A common purpose of insurance scoring is to generate useful information in underwriting and pricing insurance for the individual risk being scored. The score provides a relative measure of the expected cost to the insurance company associated with the risk.

A credit-based insurance score utilizes various attributes found in a typical individual's credit report. There are several different scoring models currently in use to calculate credit-based insurance scores, including models developed by third-party vendors and proprietary models built by individual insurance companies. The type of credit attributes generally having the

[2] http://www.actuary.org/pdf/casualty/credit_dec02.pdf (last visited on Apr. 24, 2009).

greatest effect on an individual's insurance score include: number of inquiries into opening new accounts, accounts 30 days or more past due. While the attributes and relative values are not identical for all companies, generally the higher the credit-based insurance score, the better an individual's credit rating.

The importance of credit-based insurance scores is that there is a strong correlation between them and the expected costs associated with the risk. In other words, in a group of insureds who are identical in every other way, insureds with favorable insurance scores are significantly more likely to have better loss experience than insureds with unfavorable insurance scores. Consequently, credit-based insurance scores are a statistically reliable tool for segmenting risks into different groups with different expected cost levels. This has been demonstrated in a number of studies and reports, some of which we have listed in Appendix A.

Evaluation of How Insurers Use Credit-Based Insurance Scores

Most state insurance laws prohibit the use of insurance rates that are excessive, inadequate, or unfairly discriminatory. Principle 4 of the Casualty Actuarial Society's *Statement of Principles Regarding Property and Casualty Insurance Ratemaking* states that, "A rate is reasonable and not excessive, inadequate, or unfairly discriminatory if it is an actuarially sound estimate of the expected value of all future costs associated with an individual risk transfer."[3] Thus, the overall average rate level should be set so that the total premium collected from all risks is sufficient to cover the total expected costs. Additionally, the individuals' rates should be set such that the premium collected from each individual risk, or group of similar risks, reflects the expected costs for that individual risk (or group of similar risks).

In a 2001 survey, 90 percent of the responding insurers (from the top 100 personal lines companies) indicated that they were using credit data.[4] According to the survey, the use of credit data is a relatively recent trend; more than half of the responding insurers using credit said that they began using credit in 1998 or later. Today, the number of companies using credit is likely even greater. Some insurers use insurance scores simply to determine whether a prospective insured qualifies to be written by the company. More typically, insurers also use insurance scores to help segment risks into different groups with similar expected costs for the purpose of rating. In such cases, the insurer may use the insurance score directly as a rating factor, also called a "risk classification factor," similar to an amount of insurance for homeowners' insurance or prior violations for private-passenger auto insurance. Alternatively, an insurer with multiple "tiers" representing different levels of expected cost may use the insurance score to help assign risks to the appropriate tier. Whether insurance scores are being used as a risk classification or

[3] http://www.casact.org/standards/princip/sppcrate.pdf (last visited on Apr. 22, 2009), *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, Casualty Actuarial Society, May 1988.
[4] "Insurance Scoring in Personal Automobile Insurance—Breaking the Silence," Conning & Company, 2001.

tiering factor, the impact is the same: insurance scores are being used to segment risks into homogenous groups so that appropriate premiums can be charged.

With respect to insurance scores as a risk classification or tiering factor, the actuary is guided by Actuarial Standard of Practice (ASOP) No. 12, *Risk Classification*.[5] Rating plans for individual lines of insurance generally include several different risk classifications. For example, private-passenger auto lines use such risk classifications as the make and model of the car, age of the driver, prior traffic violations and accidents, etc. For homeowners' insurance, examples of risk classification include amount of insurance, type of home construction, prior loss history, etc. The key section of ASOP No. 12 that is applicable to the use of insurance scores is section 3.2.1., which reads in part as follows:

> Relationship of Risk Characteristics and Expected Outcomes—The actuary should select risk characteristics that are related to expected outcomes. A relationship between a risk characteristic and an expected outcome, such as cost, is demonstrated if it can be shown that the variation in actual or reasonably anticipated experience correlates to the risk characteristic. In demonstrating a relationship, the actuary may use relevant information from any reliable source, including statistical or other mathematical analysis of available data. The actuary may also use clinical experience and expert opinion.
>
> Rates within a risk classification system would be considered equitable if differences in rates reflect material differences in expected cost for risk characteristics. In the context of rates, the word *fair* is often used in place of the word *equitable*.
>
> The actuary should consider the interdependence of risk characteristics. To the extent the actuary expects the interdependence to have a material impact on the operation of the risk classification system, the actuary should make appropriate adjustments.

The summary of articles on credit in Appendix A includes several studies that have shown that credit scores reflect significant differences in expected loss costs. Thus, credit scores are appropriate tools for risk differentiation. Rates based on groups differentiated by insurance score are not excessive, inadequate, or unfairly discriminatory.

The removal of such insurance scores will not lower overall premium collected; it will only redistribute the premium collected such that risks with lower expected costs will pay more, and those with greater expected costs will pay less.

While the evidence may only be anecdotal, most companies report that the use of insurance scores, along with multivariate rating and other new rating factors, have allowed them to write more risks from the general population than before these features were introduced.

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[5] http://www.actuarialstandardsboard.org/pdf/asops/asop012_101.pdf (last visited on Apr. 22, 2009), Actuarial Standard of Practice No. 12, *Risk Classification (for All Practice Areas)*, adopted by the Actuarial Standards Board, Dec. 2005.

If the NAIC determines that further studies may be appropriate, the Casualty Practice Council would be pleased to assist the NAIC in such studies.

Discussion of How Current Economic Conditions Have Affected Policyholder Premiums Related to Credit-Based Insurance Scores

While our current economic condition is certainly on everyone's mind, it is still uncertain exactly how this will affect overall insurance costs and, therefore, overall insurance prices. Some regulators or other public officials may be concerned that if the current economic crisis causes insurance scores to worsen, it will lead to unwarranted premium increases. It is important to consider both the impact on the aggregate premium and on individuals' premium.

First, it is important to consider the impact on the aggregate premium. Insurers use insurance scores to determine appropriate rate relationships between risk classes, not to determine overall premium need. Assume for a moment that insurers continue to maintain the same rate relationships for different insurance score ranges, and that the current economic crisis causes every insureds' insurance score to worsen. The actuary would observe this distributional shift or change and adjust overall rate levels so that the total premium collected by the insurance company remains the same and the integrity of the rate relationships among risks remains intact.

This is no different than any other distributional shift, such as an increase in the average value of homes, which an actuary has to consider when setting the overall rate level. Part of a typical actuarial rate review is an analysis of any shifts in distributions that affect the premium level. The actuary would adjust for these shifts in determining appropriate future rates. As a result of this standard ratemaking practice, any shift in insurance scores due to the current adverse economic conditions will not result in any long-term impact on overall premium collected.

Second, it is important to consider the impact on the individuals' premium.[6] As stated earlier, studies have demonstrated that insurance scores are an effective means of segmenting risks. Because of this, many companies now vary the rates charged to risks with different insurance scores. Some regulators or other public officials may be concerned that a dramatic shift in credit scores could disrupt the current relative rates among risks with insurance scores; in other words, perhaps the difference in expected cost levels among insureds with favorable and unfavorable scores will be less significant.

This, too, is not a problem that is unique to insurance scores. The gender and age of drivers have long been recognized as important rating characteristics for personal automobile insurance. There have been, and still are, very significant differences between the rates charged to young

[6] It is important to remember that any distribution shift is likely to have a smaller effect on renewal business than on new business, because some states and/or companies only permit the use of such scores for renewals if it results in a more favorable rate for the individual insured.

males and young females, reflecting the higher cost of auto insurance for young male drivers compared to young female drivers. However, over time, the driving habits of young males and young females have become more similar, and while the difference in risk is still significant, it is not nearly as large as it was in the past. As this trend has developed, insurers adjusted classification plans to reduce the rate differentials to reflect it. If the actuary regularly analyzes the indicated rate differentials for different insurance score ranges, the rate differentials will be changed if more recent data suggests it. This potential shift in group differentials, and motivation or intent to be competitive, provide incentives for companies to regularly review their rate differences.

One of the other roles of an actuary is to regularly review the data to decide whether the overall average rate level is appropriate and whether the rate differentials for risks with different insurance scores need to be adjusted. By doing this, the actuary can ensure that the rates are actuarially sound,[7] regardless of the effect the current economic crisis has on personal insurance scores.

It is possible that a sudden or immediate distribution shift could result from the current economic conditions, and that, by the time it works its way into the actuary's data, many insureds will have already been harmed. While we have been suffering through the current economic conditions for approximately six months, we are unaware of any quantifiable evidence that has surfaced to demonstrate that such a dramatic shift has been occurring. It is our opinion, based on anecdotal evidence, that any shift thus far has been minor. This could be because renewal business, which makes up the majority of any company's business, is less likely to be affected by a shift. Ascertaining whether an actual shift of any significance has occurred would require a study to look at the distribution of insurance scores of several companies over a period of time. The Casualty Practice Council is willing to assist the NAIC should it decide to pursue such a study.

On behalf of the Academy and the Casualty Practice Council, I thank you for the opportunity to speak to you today. To the extent that we can further assist the NAIC in its endeavors on this topic, the Casualty Practice Council volunteers its services. We look forward to working with you.

If time permits, I am happy to answer any questions you may have.

[7] http://www.casact.org/standards/princip/sppcrate.pdf (last visited on Apr. 22, 2009), *Statement of Principles Regarding Property and Casualty Insurance Ratemaking*, Casualty Actuarial Society, May 1988.

Appendix A – Summary of Additional Articles on Credit Scoring

Several studies have already been conducted on the use of credit for rating and underwriting for both homeowners' and private-passenger auto insurance. In particular, the following studies may warrant review:

- *Predictiveness of Credit History for Insurance Loss Ratio Relativities* by Isaac Fair, (1999).
- *Use of Credit Reports in Underwriting* by the Commonwealth of Virginia, State Corporation Committee, Bureau of Insurance (1999).
- *The Impact of Personal Insurance Credit History on Loss Performance in Personal Lines* by James D. Monaghan (2000).
- *Insurance Scoring in Personal Automobile Insurance – Breaking the Silence* by Conning & Company (2001).
- *Use of Credit Information by Insurers in Texas* by the Texas Department of Insurance (December 2004).
- *Use of Credit Information by Insurers in Texas – the Multivariate Analysis* by the Texas Department of Insurance (January 2005).
- *Credit-Based Insurance Scores: Impact on Consumers of Automobile Insurance* by the Federal Trade Commission (July 2007).
- *Report to the Congress on Credit Scoring* by the Board of Governors of the Federal Reserve System (2007).

Basic Reinsurance Accounting—Selected Topics

By Ralph S. Blanchard, III, FCAS, MAAA
and Jim Klann, FCAS, MAAA

October 2012

CAS Study Note

Basic Reinsurance Accounting – Selected Topics

October 2012

The purpose of this study note is to educate actuaries on certain basic reinsurance accounting topics that may be omitted in other syllabus readings. Specifically, this study note provides examples of how ceded reinsurance impacts an insurer's financial statements and key financial metrics.

Ceded Reinsurance Impact on Financial Statements

The book "Reinsurance Principles and Practices" by Connor Harrison lists the following six principal functions of reinsurance.

1. Increase large line capacity
2. Provide catastrophe protection
3. Stabilize loss experience
4. Provide surplus relief
5. Facilitate withdrawal from a market segment
6. Provide underwriting guidance

This paper will give an example of each of these types of reinsurance, and examine the impact to the ceding company on the following:

- Surplus
- Loss reserves
- Unearned Premiums
- Leverage ratios
- Income statement

The financial statements shown in the examples follow the SAP convention of offsetting ceded liabilities against gross liabilities.

1. Increase large line capacity

This example deals with the situation where a company is only willing to expose itself to a certain amount of loss per policy, but portions of its potential market demand greater coverage.

Beginning Assumptions (the "Without" column):

- XYZ insurance company writes homeowners insurance. It is unable or unwilling to write policies for homes with insured values over $500,000 without a suitable reinsurance program.
- XYZ writes $1 million of annual premium for this market, in a steady state with a level premium volume. The loss ratio is 75%. The only expense is commissions, which equal 20% of premium.
- Loss reserves = $750,000 and surplus = $1.5 million. Since XYZ is in a steady state, reserves and surplus are constant throughout the year.
- XYZ holds cash equal to 10% of gross loss reserves, agent balances equal to 10% of premium, and the remainder of its assets in bonds. The bonds and cash earn investment income at a rate of 5%.
- There are no income taxes.

Altered Assumptions (the "With" column):

- XYZ buys a "surplus share" pro rata reinsurance treaty that cedes premiums and losses for higher valued homes, with the ceding percentage for each policy equal to the excess of the home value over $500,000 divided by the total home value. (For example, for a home worth $625,000, the ceded percentage would be 125/625, or 20%.)
- This is the only reinsurance purchased by XYZ.
- The altered assumptions again reflect level premium volume and a steady state, in which XYZ has been writing identical business over a period of years.

- With access to the higher-value market, XYZ writes 40% more business and achieves $1.4 million in gross written premium. However under the treaties it cedes $300,000 of premium.
- The loss ratio remains 75% on both net and ceded business. However reserves increase relative to loss, because claims on more expensive properties take longer to develop.
- The expense ratio remains 20% of net written premium. The reinsurer pays a ceding commission to compensate for commissions on ceded business, so there is no net additional commission on ceded premium.
- Agent balances remain equal to 10% of premium, of which a portion, equal to the percent of premium ceded, is due to the reinsurer.
- We arbitrarily assume only a small increase in surplus, matching the increase in current year income.

Example 1			
XYZ Insurance Company			
Impact of Large Line Capacity Treaty			
Balance Sheet	Without	With	Difference
Assets			
Bonds	2,575	2,662	87
Cash	75	113	38
Agents Balances	100	140	40
Total	2,750	2,915	165
Liabilities			
Loss Reserves			
Gross	750	1,125	375
Ceded	0	300	300
Net	750	825	75
Unearned Premiums			
Gross	500	700	200
Ceded	0	150	150
Net	500	550	50
Ceded Agents Balances	0	30	30
Total	1,250	1,405	155
Surplus	1,500	1,510	10
Income Statement			
Earned Premium			
Gross	1,000	1,400	400
Ceded	0	300	300
Net	1,000	1,100	100
Incurred Losses			
Gross	750	1,050	300
Ceded	0	225	225
Net	750	825	75
Expenses	200	220	20
Underwriting Income	50	55	5
Investment Income	133	139	6
Total Income	183	194	11
Written Premiums			
Gross	1,000	1,400	400
Ceded	0	300	300
Net	1,000	1,100	100
Other Financial Statistics			
Gross WP/Surplus	67%	93%	26%
Net WP/Surplus	67%	73%	6%
Gross Loss Reserves/Surplus	50%	75%	25%
Net Loss Reserves/Surplus	50%	55%	5%
Ceded Reserves/Surplus	0%	30%	30%

Analysis of impact (from Exhibit 1)

- Surplus – We assumed no impact on surplus other than earnings on additional business opportunities. In reality, given the additional premium and reserves and reinsurance collectability risk, the ceding company may desire (or be forced to) hold more surplus to support these greater risks. Alternatively, it could decide to reduce volume to retain the same level of surplus relative to risk.
- Loss reserves – Both gross and net loss reserves increase, partly due to increased premium volume and partly due to the nature of new business being pursued, with slower development on larger claims.
- Unearned Premiums – increase, but remain the same in proportion to premium
- Leverage ratios – Net leverage ratios increase slightly because of the change in business model. Gross leverage ratios begin to differ materially from the net leverage ratios, and reinsurance leverage becomes important due to the purchase of reinsurance.
- Income statement – Little changed on a net basis, but over time the riskier book and changing cost of reinsurance may introduce greater volatility.

2. Provide Catastrophe Protection

This example deals with the situation where the company desires to reduce its potential loss from a catastrophic event.

Beginning Assumptions (the "Without" columns):

- ABC insurance company is in the same situation as XYZ insurance company in Exhibit 1, prior to the purchase of reinsurance. Hence, the "without" column in Exhibit 1 also applies to Exhibit 2, unless a catastrophe event occurs.
- If a cat event occurs, ABC incurs an additional $500,000 in loss, of which $50,000 is paid by the end of the year and the remainder is reserved.

Altered Assumptions (the "With" columns):

- ABC buys a catastrophe treaty on January 1st, for 5% of gross premium, that pays for losses from a single event in excess of 10% of premium. This premium is payable at the start of the year. *(Note that this assumption leaves zero ceded unearned at December 31st. Ceded unearned would be greater than zero if the ceded reinsurance policy term had not yet expired.)*
- This is the only reinsurance purchased by ABC.
- If a cat event occurs, ABC incurs an additional $500,000 in loss. This activates the cat treaty and the reinsurer assumes responsibility for the excess of event losses over 10% of premium, or $500,000 minus $100,000 = $400,000. Non-cat loss levels are unaffected by this event.
- Once again only 10% of the cat losses are paid by year-end, with the rest paid the following year. Note that the reinsurer does not begin paying until paid losses exceed 10% of premium, so the entire $400,000 of ceded loss is ceded reserve.
- The cat treaty has a mandatory reinstatement premium provision, with the reinstatement premium due once the cat treaty attachment is reached on a paid basis. This reinstatement premium charge is 2% of gross premium.
- The only surplus change is due to the change in underwriting results.

Example 2						
ABC Insurance Company						
Impact of Cat Treaty						
Balance Sheet	No Cat Event			Cat Event		
	Without	With	Difference	Without	With	Difference
Assets						
Bonds	2,575	2,525	(50)	2,480	2,430	(50)
Cash	75	75	-	120	120	-
Agents Balances	100	100	-	100	100	-
Total	2,750	2,700	(50)	2,700	2,650	(50)
Liabilities						
Loss Reserves						
Gross	750	750	-	1,200	1,200	-
Ceded	0	0	-	0	400	400
Net	750	750	-	1,200	800	(400)
Unearned Premiums						
Gross	500	500	-	500	500	-
Ceded	0	0	-	0	0	-
Net	500	500	-	500	500	-
Ceded Agents Balances	0	0	-	0	20	20
Total	1,250	1,250	-	1,700	1,320	(380)
Surplus	1,500	1,450	(50)	1,000	1,330	330
Income Statement						
Earned Premium						
Gross	1,000	1,000	-	1,000	1,000	-
Ceded	0	50	50	0	70	70
Net	1,000	950	(50)	1,000	930	(70)
Incurred Losses						
Gross	750	750	-	1,250	1,250	-
Ceded	0	0	-	0	400	400
Net	750	750	-	1,250	850	(400)
Expenses	200	200	-	200	200	-
Underwriting Income	50	-	(50)	(450)	(120)	330
Investment Income	133	130	(3)	130	128	(3)
Total Income	183	130	(53)	(320)	8	328
Written Premiums						
Gross	1,000	1,000	-	1,000	1,000	-
Ceded	0	50	50	0	70	70
Net	1,000	950	(50)	1,000	930	(70)
Other Financial Statistics						
Gross WP/Surplus	67%	69%	2%	100%	75%	-25%
Net WP/Surplus	67%	66%	-1%	100%	70%	-30%
Gross Loss Reserves/Surplu	50%	52%	2%	120%	90%	-30%
Net Loss Reserves/Surplus	50%	52%	2%	120%	60%	-60%
Ceded Reserves/Surplus	0%	0%	0%	0%	30%	30%

Analysis of impact (from Example 2)

- Surplus – Buying the cat reinsurance decreases surplus if no cat event occurs, due to the cost of reinsurance. But it can substantially mitigate the risk of significant drops in surplus if large cats occur. Note that the cost of the reinsurance in the event of a cat includes both the original premium and the reinstatement premium.
- Loss reserves – Net reserves are not impacted unless a covered cat event occurs. In that case, gross loss reserves can increase significantly for a relatively short period of time (i.e., the length of the cat payout pattern). Net reserves will return to normal levels sooner than gross reserves, as the retained portion of the cat is generally paid first before the ceded portion of the cat.
- Unearned Premiums – Little to no change (depending on the cat reinsurance policy term and accounting date), as cat reinsurance is normally a limited portion of total premium.
- Leverage ratios – If no cat event occurs, the biggest impact may be from reduced surplus in the denominator of many leverage ratios. If a cat does occur, then gross ratios and net ratios are significantly impacted without the reinsurance, while only the gross ratios are significantly impacted with the reinsurance (with the exception of ceded reinsurance leverage ratios). In general, ceded reinsurance leverage (i.e., ceded balances[1] as a percent of surplus) can be significantly impacted in the period after a major cat, prior to the runoff of the resulting cat loss reserves.
- Income statement – Investment income is reduced by purchasing reinsurance. But underwriting income is substantially protected, with the loss limited to the original ceded premium, plus the retention and reinstatement premium if a covered cat occurs. (This assumes that the cat stays within the maximum limit of the cat reinsurance program.)

3. Stabilize loss experience

This example deals with the situation where loss experience may fluctuate from year to year more than management desires. Management desire may in turn be driven by capital provider demands, or management may wish to simplify the capital management process (including the determination of shareholder dividends).

Beginning Assumptions (the "Without" columns):

- DEF insurance company is in the same situation as XYZ insurance company in Exhibit 1, prior to the purchase of reinsurance. The "normal losses without" column reflects a "normal" loss year with a loss ratio of 75%, as per Exhibit 1.
- However, this example also recognizes the possibility that a "high" loss year may occur, with a loss ratio of 125%. If a high loss year occurs, DEF incurs an additional $500,000 in loss, of which $50,000 is paid by the end of the year and the remainder is reserved.

Altered Assumptions (the "With" columns):

- DEF buys an aggregate excess of loss treaty for the entire book on January 1st, for 10% of gross premium, that returns 90% of losses above a loss ratio of 100%. The reinsurance premium is payable at the start of the year. *(Note that this assumption results in zero ceded unearned at December 31st. Ceded unearned would be greater than zero if the ceded reinsurance policy term had not yet expired.)*
- This is the only reinsurance purchased by DEF.
- In the high loss example, DEF incurs an additional $500,000 in loss for a loss ratio of 125%. This activates the aggregate excess treaty and the reinsurer assumes responsibility for 90% of losses above a loss ratio of 100%, or ($1,250,000 minus $1,000,000) * 90% = $225,000.

[1] Ceded balances are those balance sheet values arising from ceded reinsurance. In the above examples, they include ceded loss reserves and ceded unearned premiums. In a real-life example, they would also include reinsurance recoverables from amounts billed but not yet collected.

- Once again only 10% of the additional losses (over and above "normal" losses) are paid by year-end, with the rest paid the following year. Note that the reinsurer does not begin paying until paid losses exceed 100% of premium, so the entire $225,000 of ceded loss is ceded reserve.
- The only surplus change is due to the change in underwriting results.

Example 3						
DEF Insurance Company						
Impact of Aggregate Excess Treaty						
Balance Sheet	Normal Losses			High Losses		
	Without	With	Difference	Without	With	Difference
Assets						
Bonds	2,575	2,475	(100)	2,480	2,380	(100)
Cash	75	75	-	120	120	-
Agents Balances	100	100	-	100	100	-
Total	2,750	2,650	(100)	2,700	2,600	(100)
Liabilities						
Loss Reserves						
Gross	750	750	-	1,200	1,200	-
Ceded	0	0	-	0	225	225
Net	750	750	-	1,200	975	(225)
Unearned Premiums						
Gross	500	500	-	500	500	-
Ceded	0	0	-	0	0	-
Net	500	500	-	500	500	-
Ceded Agents Balances	0	0	-	0	0	-
Total	1,250	1,250	-	1,700	1,475	(225)
Surplus	1,500	1,400	(100)	1,000	1,125	125
Income Statement						
Earned Premium						
Gross	1,000	1,000	-	1,000	1,000	-
Ceded	0	100	100	0	100	100
Net	1,000	900	(100)	1,000	900	(100)
Incurred Losses						
Gross	750	750	-	1,250	1,250	-
Ceded	0	0	-	0	225	225
Net	750	750	-	1,250	1,025	(225)
Expenses	200	200	-	200	200	-
Underwriting Income	50	(50)	(100)	(450)	(325)	125
Investment Income	133	128	(5)	130	125	(5)
Total Income	183	78	(105)	(320)	(200)	120
Written Premiums						
Gross	1,000	1,000	-	1,000	1,000	-
Ceded	0	50	50	0	70	70
Net	1,000	950	(50)	1,000	930	(70)
Other Financial Statistics						
Gross WP/Surplus	67%	71%	5%	100%	89%	-11%
Net WP/Surplus	67%	68%	1%	100%	83%	-17%
Gross Loss Reserves/Surplu	50%	54%	4%	120%	107%	-13%
Net Loss Reserves/Surplus	50%	54%	4%	120%	87%	-33%
Ceded Reserves/Surplus	0%	0%	0%	0%	20%	20%

Analysis of impact (from Example 3)

- Surplus – The expected value of surplus is lower after buying reinsurance, but with less period-to-period variation. The reduction is caused by the expected net cost of reinsurance. Note that while the ***expected*** impact of surplus is a reduction, the impact from year to year may vary between reductions and increases as gross losses are lower or higher than expected.
- Loss reserves – Stabilizing loss experience net of reinsurance generally translates into stabilizing net of reinsurance loss reserves. Gross reserves reflect the full volatility of year-to-year results, but net reserves should be smaller and more stable. (They may also be easier to estimate, as the situations that cause loss experience to fluctuate may also cause claim liability estimation to be more difficult.)
- Unearned Premiums – Reduced on a net basis due to the purchase of reinsurance, unless (as in our example) the reinsurance is purchased with a single effective date and the accounting date being used is the reinsurance expiration date.
- Leverage ratios – These ratios on a net basis should be more stable but slightly higher (due to reduced surplus), assuming there is a positive net cost of the reinsurance.
- Income statement – Underwriting results over time would be expected to be lower, due to the net cost of the reinsurance, and investment income would be lower. But the underwriting results from year-to-year should be more stable.

4. Provide surplus relief

This reinsurance deals with the situation where leverage ratios are higher than desired. Reinsurance is therefore purchased with the intent of reducing leverage ratios net of reinsurance.

Beginning Assumptions (the "Without" column):

- XYZ insurance company here is in the same situation as XYZ insurance company in Exhibit 1 prior to the purchase of reinsurance, except that it has fewer bonds and therefore only has $500,000 in surplus.

Altered Assumptions (the "With" column):

- XYZ buys reinsurance with a 50% quota share, in order to reduce its net premium to surplus and net reserves to surplus leverage ratios. This is a straight quota share, with 50% of premiums and losses ceded, with a ceding commission of 20% (consistent with the gross expense ratio).
- This is the only reinsurance purchased by XYZ.
- The altered assumptions once again reflect a steady state with consistent gross and ceded premium from year to year.
- The only surplus change is due to the change in underwriting and investment income during the year.

Example 4				
XYZ Insurance Company				
Impact of Quota Share Treaty				
Balance Sheet	Without	With		Difference
Assets				
Bonds	1,575	943		(632)
Cash	75	75		-
Agents Balances	100	100		-
Total	1,750	1,118		(632)
Liabilities				
Loss Reserves				
Gross	750	750		-
Ceded	0	375		375
Net	750	375		(375)
Unearned Premiums				
Gross	500	500		-
Ceded	0	250		250
Net	500	250		(250)
Ceded Agents Balances	0	50		50
Total	1,250	675		(575)
Surplus	500	443		(57)
Income Statement				
Earned Premium				
Gross	1,000	1,000		-
Ceded	0	500		500
Net	1,000	500		(500)
Incurred Losses				
Gross	750	750		-
Ceded	0	375		375
Net	750	375		(375)
Expenses	200	100		(100)
Underwriting Income	50	25		(25)
Investment Income	83	51		(32)
Total Income	133	76		(57)
Written Premiums				
Gross	1,000	1,000		-
Ceded	0	500		500
Net	1,000	500		(500)
Other Financial Statistics				
Gross WP/Surplus	200%	226%		26%
Net WP/Surplus	200%	113%		-87%
Gross Loss Reserves/Surplus	150%	169%		19%
Net Loss Reserves/Surplus	150%	85%		-65%
Ceded Reserves/Surplus	0%	141%		141%

Analysis of impact (from Example 4)

- Surplus – Liabilities decrease because half of the losses and unearned premium are ceded, but assets decrease because of the cost of the reinsurance. The net effect in our example is a small decline in surplus, since the ceded business was profitable. This quota share reinsurance would only increase surplus if the business was being written at a loss.
- Loss reserves – Net reserves are a fixed percentage of gross reserves.
- Unearned Premiums – Net reserves are a fixed percentage of gross reserves.
- Leverage ratios – Net leverage ratios are significantly improved, although ceded reinsurance leverage ratios are significantly increased. Hence, the insurer's solvency becomes more reliant on its reinsurers' solvency. Note that ceding half the gross business does not halve the net leverage ratios, due to the impact of the cession on surplus. While premiums and loss reserves drop in half, surplus does not stay constant. Hence, a cession of more than 50% would be required to obtain a 50% reduction in net premium and reserve ratios to surplus.
- Income statement – Underwriting income is cut in half, and investment income is significantly reduced.

5. Facilitate withdrawal from a market segment

This example deals with the situation where management wants to exit a market, and is not willing to wait until the runoff of existing obligations.

Beginning Assumptions (the "Beginning Balance" and "Without" columns):

- XYZ insurance company here is in the same situation as XYZ insurance company in Exhibit 1 except that it stopped writing new business at the beginning of the current year. The beginning balances come from Exhibit 1, "without" column.
- Written premium for the current year therefore drops to zero. XYZ continues to earn premium, and incur losses, on business written during the prior year.
- The accounting paradigm does not recognize Deferred Acquisition Costs, so XYZ incurs a zero expense ratio on runoff earned premium.
- XYZ earns investment income on the average of beginning and ending cash and bonds.
- All loss reserves as of the beginning of the year (for events occurring in earlier years) are closed and paid at the reserve amount before the end of the year.
- Half of all losses occurring during the year are paid by the end of the year.
- Surplus changes, during the year, only due to underwriting and investment income.

Altered Assumptions (the "With" column):

- XYZ buys prospective reinsurance on January 1st to cede 100% of the remaining unearned premium, and all losses occurring after the beginning of the year. A ceding commission is included to cover the commission portion of the unearned premium, which XYZ paid during the previous year.
- XYZ does not buy retroactive reinsurance. Once again all loss reserves as of the beginning of the year (for events occurring in earlier years) are closed and paid by XYZ at the reserve amount before the end of the year.
- Surplus changes, during the year, only due to underwriting and investment income.

Note: This example assumes withdrawal from all business. These results would need to be combined with results from ongoing businesses to see the combined balance sheet and income statement impact.

Example 5				
XYZ Insurance Company				
Impact of Prospective Reinsurance Treaty				
Balance Sheet	Beginning Balances:	Ending Balances Without:	Ending Balances With:	Difference
Assets				
Bonds	2,575	1,908	1,690	(218)
Cash	75	19	19	-
Agents Balances	100	-	-	-
Total	2,750	1,927	1,709	(218)
Liabilities				
Loss Reserves				
Gross	750	188	188	-
Ceded	0	0	188	188
Net	750	188	-	(188)
Unearned Premiums				
Gross	500	-	-	-
Ceded	0	-	-	-
Net	500	-	-	-
Ceded Agents Balances	0	-	-	-
Total	1,250	188	-	(188)
Surplus	1,500	1,739	1,709	(30)
Income Statement				
Earned Premium				
Gross		500	500	-
Ceded		0	500	500
Net		500	-	(500)
Incurred Losses				
Gross		375	375	-
Ceded		0	375	375
Net		375	-	(375)
Expenses		-	(100)	(100)
Underwriting Income		125	100	(25)
Investment Income		114	109	(5)
Total Income		239	209	(30)
Written Premiums				
Gross		-	-	-
Ceded		-	-	-
Net		-	-	-
Other Financial Statistics				
Gross WP/Surplus		0%	0%	0%
Net WP/Surplus		0%	0%	0%
Gross Loss Reserves/Surplus		11%	11%	0%
Net Loss Reserves/Surplus		11%	0%	-11%
Ceded Reserves/Surplus		0%	11%	11%

Analysis of Impact (from Example 5)

- Surplus – Liabilities decline to zero as losses and unearned premium are ceded, but assets decrease because of the cost of the reinsurance. The net effect, once again, is a small decline in surplus, since the ceded business was profitable. However surplus will be less volatile if there are unexpectedly large or small losses during the runoff year.
- Loss reserves – Gross reserves are unchanged, but net reserves disappear, hence exposure to the volatility of net reserve estimates disappears.
- Unearned Premiums – Gross reserves disappear over the year as the business runs off. Net reserves disappear immediately when the unearned premium is ceded.
- Leverage ratios – Net leverage ratios are zero, hence the only remaining insurance risk is reinsurance collectability risk. Hence, surplus that was supporting the runoff business should now be free to support existing or new business, subject to supporting the residual reinsurance collectability risk.
- Income statement – Underwriting results reflect a profit because the ceding commission offsets expenses which were paid the previous year. This profit is slightly smaller than if the business had not been ceded. However the risk in the results is now greatly reduced (and limited to the risk in reinsurance collectability and in investment results).

6. Provide underwriting guidance

This reinsurance function arises in the situation where management wishes to enter a new market, or believes that it must be in one market to support another of its markets, but does not feel comfortable with its expertise in that new market. It therefore heavily reinsures its writings in that new market, relying on the reinsurer's expertise in pricing and underwriting that market correctly.

No numeric example will be provided for this situation. It is conceptually equivalent to Exhibit 1 wherein reinsurance creates new business opportunities for the insurer. The impact on surplus and income will depend on the profitability and volume (after reinsurance cessions) of the new business.

SECTION I

All property and casualty (P&C) insurance companies are required to complete a uniform Quarterly and Annual Supplement P&C return, although jurisdictions may apply certain conditions to meet their own particular requirements.

The P&C returns are designed to enable regulators to monitor the financial condition and operating results of insurers, as well as certain compliance requirements.

These instructions are generally applicable to all jurisdictions, but insurers should refer any specific P&C return questions to their primary regulator.

Canadian insurance companies may be registered federally under the *Insurance Companies Act (ICA)*, or incorporated under the incorporation statutes of a province or territory and, in some cases, under private bill. Foreign P&C insurance companies must be registered federally under the ICA to insure in Canada a risk. Regardless of the jurisdiction of incorporation, all insurers must first obtain a licence in a province or territory before operations can commence. Completion of some schedules in the P&C return depends on the insurer's jurisdiction of incorporation and/or provincial licensing. Please refer to the "Table of Contents" of the P&C return and Section VI for detailed instructions.

Insurers must comply with the legislation of the primary regulator with respect to record retention.

Foreign P&C Insurance Companies

The P&C return of a foreign company should reflect only the company's risks that were insured in Canada. Under Part XIII of the ICA regulatory reporting of a foreign entity's business is now based on the location of the insurance rather than the location of the risk. For this reason, risks located outside Canada but insured in Canada by the Canadian branch should also be reported on the regulatory return. Conversely, risks located in Canada but insured outside Canada (e.g. by Home Office) would not be included.

Please refer to the Advisory 2007-01-R1, *Insuring in Canada of Risks*. This advisory provides guidance on indicia to consider in determining, for the purpose of the ICA, whether a foreign entity is insuring in Canada a risk and states how OSFI will apply these indicia to various business models.

This definition of business in Canada is to be applied on a retroactive restatement basis by adjusting the opening balance sheet on January 1, 2010 through the Head Office Account for:

- Previously unreported business; and/or
- Removal of business where prior approval has been received from OSFI.

Amendments to the ICA do not change the obligation for foreign entities to comply with provincial requirements. New pages have been added to satisfy these requirements. Therefore, pages 85.40, 85.45 and 85.60 must be completed based on location of risk and must include risks located in Canada that have been insured in Canada and/or abroad. Conversely, risks outside Canada but insured in Canada (e.g. by Home Office) would not be included.

Please refer to OSFI's website for a list of all current validation rules.

Accounting Principles – Quarterly and Annual Supplement Returns

The Canadian Accounting Standards Board (AcSB) has adopted International Financial Reporting Standards (IFRS) as Canadian Generally Accepted Accounting Principles (CGAAP) for publicly accountable enterprises (PAEs). As P&C insurers have fiduciary responsibilities, they are considered to meet the definition of a PAE and are required to report using IFRS for fiscal years beginning on or after January 1, 2011.

For the purposes of the regulatory return instructions, the term "IFRS" will refer to requirements under "Part I- International Financial Reporting Standards" of the *CPA Canada Handbook*.

Consolidated Financial Statements (Canadian P&C Insurance Companies)

With the implementation of IFRS, consolidated reporting within the P&C return is required, except for life company subsidiaries, which are expected to be reported using the equity method.

All regulatory return core financial statements, notes, supporting schedules and exhibits are to be completed on a consolidated basis in accordance with IFRS, with the exception of non-consolidated items as noted on the schedule and life company subsidiaries as noted above.

Non-consolidated statements, additional supporting pages and exhibits should be reported on an IFRS basis, except for investments in subsidiaries, interests in joint ventures and variable interest entities, which should be reported on an equity basis.

Statutory Authority

Each jurisdiction has its own statutes which govern the reporting requirements of the particular insurer. Certain jurisdictions will allow an insurer licensed in their jurisdiction but domiciled in another to follow the reporting requirements of the home jurisdiction. Insurers are advised to be aware of the statutes of all jurisdictions in which they are licensed. Relevant legislation for federally and provincially registered insurers is noted in "Section V - Jurisdictional Requirements."

Guidelines and Bulletins

Guidelines and bulletins issued by regulators are listed under the applicable jurisdictions in "Section V - Jurisdictional Requirements."

Language Preference

The P&C returns and related instructions are available in both official languages. Some jurisdictions will accept filings in either official language. See "Section V- Jurisdictional Requirements" for specific details.

General

The Canadian Council of Insurance Regulators (CCIR) Forms Committee is interested in your comments on any aspect of the return and/or instructions. Please direct your comments to the:

Office of the Superintendent of Financial Institutions
Regulatory Information Division
255 Albert Street, 12th floor
Ottawa, ON K1A 0H2

Attention: Chairperson
CCIR Forms Committee

Email: carole.gagnon@osfi-bsif.gc.ca

SECTION III

Definitions have been included in these instructions to assist insurers with the preparation of their filings.

This section is not a complete set of insurance and insurance accounting definitions or interpretations. It is related specifically to the preparation of the P&C Quarterly and Annual Supplement Returns.

Other definitions are contained in the federal *Insurance Companies Act* and the various provincial and territorial insurance acts.

Additional sources of definitions include:

- IBC Glossary
- A.M. Best Glossary of Insurance Terms
- IRMI Risk and Insurance and Risk Management Terms

However, definitions contained in this section take precedence, for the completion of the P&C return, over any definition of the same terms contained in non-legislative sources.

There may be jurisdictional differences in the interpretations of certain terms; please consult your primary regulator for technical interpretations.

Classes of Insurance Definitions

The classes of insurance are defined below for ease of reference; however, please refer to your primary regulator's legislation or regulations.

The classes of insurance are defined in the order they appear on the forms listed in the return.

Property - Personal means insurance against the loss of, or damage to, property, and includes insurance against loss caused by forgery. It includes such classifications as habitational property and multi-peril policies, including residential contents of buildings such as apartments, rooming houses, motels, manufacturing and mercantile buildings and the liability exposure of personal package policies issued with indivisible premiums. This line would include fire policies, householder contents and homeowner personal risks, residential burglary and theft and special residential glass coverage. Casualty coverage such as personal liability for bodily injury would not be included in this category.

Home Warranty refers to a contract of insurance issued by a warranty provider covering defects in the construction of a new home and consequential losses or costs incurred by the owner.

Product Warranty means insurance not incidental to any other class of insurance against loss of, or damage to, personal property, other than a motor vehicle, under which an insurer undertakes to pay the costs of repairing or replacing the personal property.

Property - Commercial means insurance against the loss of, or damage to, property, and includes insurance against loss caused by forgery and all commercial property and multi-peril policies, but excludes all separate classes of insurance as defined by regulators (i.e. lines 10 through 70 of exhibits showing classes of insurance in the Annual Return).

Classes of Insurance Definitions (cont'd)

Aircraft means insurance against

(i) liability arising from bodily injury to, or the death of, a person, or the loss of, or damage to, property, in each case caused by an aircraft or the use of an aircraft; or

(ii) the loss of, the loss of use of, or damage to, an aircraft.

Automobile means insurance

(i) against liability arising from bodily injury to, or the death of, a person, or the loss of, or damage to, property, in each case caused by an automobile or the use or operation of an automobile;

(ii) against the loss of, the loss of use of, or damage to, an automobile; or

(iii) that falls within clause (i) or (ii) of the definition of accident and sickness insurance, if the accident is caused by an automobile or the use or operation of an automobile, whether or not liability exists in respect of the accident, and the policy includes insurance against liability arising from bodily injury to, or the death of, a person caused by an automobile or the use or operation of an automobile.

Insurers are encouraged to report automobile classes of insurance on a basis consistent with those reported to the General Insurance Statistical Agency (GISA) for the statistical plans.

Insurers should report under three sub-classes of coverage on the standard automobile insurance policy form as follows:

	In all provinces excluding Quebec:	In Quebec:
Liability	Section A	Chapter A
Personal Accident	Section B	Endorsements #34, #34A
Other	Section C (include Section D for Ontario)	Chapter B and all other endorsements

Classes of Insurance Definitions (cont'd)

Boiler and Machinery means insurance

(i) against liability arising from bodily injury to, or the death of, a person, or the loss of, or damage to, property, or against the loss of, or damage to, property, in each case caused by the explosion or rupture of, or accident to, pressure vessels of any kind or pipes, engines and machinery connected to or operated by those pressure vessels; or
(ii) against liability arising from bodily injury to, or the death of, a person, or the loss of, or damage to, property, or against the loss of, or damage to, property, in each case caused by a breakdown of machinery.

Equipment Warranty means the sub-class of boiler and machinery insurance that covers loss of or damage to a motor vehicle or to equipment arising from its mechanical failure, but does not include automobile insurance or insurance incidental to automobile insurance.

Credit Insurance means insurance against loss to a person who has granted credit if the loss is the result of the insolvency or default of the person to whom the credit was granted.

Credit Protection means insurance under which an insurer undertakes to pay off credit balances or debts of an individual, in whole or in part, in the event of an impairment or potential impairment in the individual's income or ability to earn an income.

Fidelity means insurance against loss caused by the theft, the abuse of trust or the unfaithful performance of duties by a person in a position of trust; and insurance under which an insurer undertakes to guarantee the proper fulfilment of the duties of an office.

Hail means insurance against the loss of, or damage to, crops in the field caused by hail.

Legal Expenses means insurance against the costs incurred by a person or persons for legal services specified in the policy, including any retainer and fees incurred for the services, and other costs incurred in respect of the provision of the services.

Classes of Insurance Definitions (cont'd)

Liability means insurance, other than insurance that falls within another class of insurance,

(i) against liability arising from bodily injury to a person or the disability or death of a person, including an employee;

(ii) against liability arising from the loss of, or damage to, property; or

(iii) if the policy includes the insurance described in sub-clause (i), against expenses arising from bodily injury to a person other than the insured or a member of the insured's family, whether or not liability exists.

Insurers are encouraged to report liability classes of insurance on a basis consistent with those reported to the General Insurance Statistical Agency (GISA) for the statistical plans.

Insurers should report under seven sub-classes of coverage the liability class of insurance as follows:

Comprehensive General Liability (with products) means general liability policy. These include, but are not limited to, the following coverages:

a) Bodily injury and property damage liability;
b) Personal injury liability;
c) Products and completed operations liability;
d) Employers' liability and voluntary compensation (injury not covered by workers' compensation);
e) Contractual liability;
f) Owners', landlords' and tenants' liability.

Comprehensive General Liability (without products) means a CGL policy with an endorsement excluding products and completed operations liability.

Cyber Liability means coverage of risks associated around liability to third parties for losses arising out of the use of e-commerce or internet related activities. Examples of this coverage include:

a) Privacy liability
b) Identity theft response
c) Network computer security
d) Internet media liability
e) Cyber extortion

Classes of Insurance Definitions (cont'd)

Directors and Officers Liability means liability as a result of accepting a position within a corporation.

Excess Liability means coverage that operates to supplement limits of liability that are available at the primary level of a particular underlying policy.

For policies that provide pure excess coverage over other separate policies, regardless of the type of liability coverage provided.

Professional Liability means a policy which provides coverage for those "professionals" who have a liability exposure arising from a specialized service provided (e.g. giving advice, providing counselling or administering a service).

Includes errors and omissions and malpractice coverages. Excludes Directors and Officers coverage.

Umbrella Liability means liability coverage that provides both excess coverage for underlying liability policies and primary level insurance for the broader coverage it provides.

Pollution Liability means coverage for pollution or environmental liability that is written as a separate policy.

Other means any insurance written under the liability class of insurance license that does not fall within the above categories.

Mortgage means insurance against loss caused by default on the part of a borrower under a loan secured by a mortgage or charge on, or other security interest in, real property.

Other Approved Products means insurance against risks that do not fall within another class of insurance.

Surety means insurance under which an insurer undertakes to guarantee the due performance of a contract or undertaking or the payment of a penalty or indemnity for any default.

Insurers should report separately for contract surety and all other surety.

Classes of Insurance Definitions (cont'd)

Title means insurance against loss or damage caused by

(i) the existence of a mortgage, charge, lien, encumbrance, servitude or any other restriction on real property;

(ii) the existence of a mortgage, charge, lien, pledge, encumbrance or any other restriction on personal property;

(iii) a defect in any document that evidences the creation of any restriction referred to in sub-clause (i) or (ii);

(iv) a defect in the title to property; or

(v) any other matter affecting the title to property or the right to the use and enjoyment of property.

Marine means insurance against

(i) liability arising from

(A) bodily injury to, or the death of, a person; or

(B) the loss of, or damage to, property; or

(C) the loss of, or damage to, property, occurred during a voyage or marine adventure at sea or on an inland waterway, or during a delay or a transit other than by water that is incidental to a voyage or marine adventure at sea or on an inland waterway.

Accident and Sickness means insurance

(i) against loss resulting from bodily injury to, or the death of, a person caused by an accident;

(ii) under which an insurer undertakes to pay a sum or sums of money in the event of bodily injury to, or the death of, a person caused by an accident;

(iii) against loss resulting from the sickness or disability of a person not caused by an accident, but excludes loss resulting from the death of the person as a consequence of sickness;

(iv) under which an insurer undertakes to pay a sum or sums of money in the event of the sickness or disability of a person not caused by an accident; or

(v) under which an insurer undertakes to pay a sum of money in respect of the health care, including dental care and preventative care, of a person.

Other Definitions

Acquisition Expenses

Policy acquisition expenses are those expenses incurred in the acquisition of new and renewal business. They include items such as commissions, premium taxes and an allocation of operating expenses.

Ancillary Operations

Any function that provides support or service to the insurance or investment operations can be considered an ancillary operation.

Associate

An associate is an entity, including an unincorporated entity such as a partnership, over which the investor has significant influence and that is neither a subsidiary nor an interest in a joint venture. "Significant influence" is defined in accordance with IFRS. For further detail on the definition of the term "associated", please refer to OSFI's MCT Guideline.

Claims Ratio

With respect to any particular period, for any policies issued by an insurer for a particular class of insurance, the ratio of claims incurred, including adjustment expenses, during that period under those policies, to net premiums earned during that period for those policies, expressed as a percentage.

Claims Ratio - By Year of Accident

The claims ratio calculated using the claims and premiums pertaining to a specific accident year.

Claims Ratio - By Year of Account

The claims ratio calculated using the claims and premiums pertaining to a specific calendar year.

Other Definitions (cont'd)

Contingent Commission

Any commission not exclusively attributable to premium volume is a contingent commission and would be considered non-deferrable. Refer to the instructions for page 80.10 for further details on commissions.

Control

Control is the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities, in accordance with the meaning of the term under IFRS.

Counselling Fees

Fees paid for investment advice.

Deferred Commissions

The estimated amount of commission expense on direct and assumed premiums relating to the coverage period beyond the current year end. Deferred commissions arising from direct and assumed business must not be reduced by unearned commissions arising from ceded business, and must be estimated by class of insurance.

Experience Rating Refunds

A refund to the insured that is based on a clause or agreement in an insurance contract that allows the insured to share in the favourable underwriting results of the contract. Also known as a "retrospective rating refund."

Financing Reinsurance

Where an agreement that is called a reinsurance agreement does not have as its primary purpose the transfer of insurance risk, such an agreement will be regarded as a financing or funding agreement rather than a reinsurance agreement and must be reported accordingly.

Government Grade

Refer to the *Minimum Capital Test (MCT) Guideline* for guidance on government grade obligations.

Other Definitions (cont'd)

Incurred But Not Reported (IBNR)

The additional claim reserves established to cover claims, including related adjustment expenses, which have occurred but which have not been reported to the insurer before the date of valuation, and for additional reserves set up to allow for an anticipated development in case reserves.

IFRS

International Financial Reporting Standards, as contained within "Part I" of the *CPA Canada Handbook*.

Insurance-Linked Securities

An insurance-linked security (ILS) is any instrument by which insurance risk is transferred to capital markets. While not exhaustive, such instruments would include catastrophe bonds, swaps, industry loss warranties, derivatives contracts and sidecars.

Insurer

Includes insurance companies, reinsurance companies, (farm) mutual insurance companies or societies, captive insurance companies, and reciprocal insurance exchanges. In Quebec, certain professional corporations are also considered insurers.

Internal Target Capital Ratio

The level of capital, based on the company's own risk and capital adequacy assessment process, necessary to cover the risks specified in the capital tests as well as all other risks of the insurer. Refer to OSFI's Guideline A-4 for further details.

Investment Properties

Investment in land and/or buildings other than for use in the insurance operations of the insurer.

Other Definitions (cont'd)

Joint Venture

A contractual arrangement whereby two or more parties undertake an economic activity that is subject to joint control.

Notional Principal Amount

The notional principal amount is:

(i) the stated notional amount, except where the stated notional amount is leveraged or enhanced by the structure of the transaction. In these cases, insurers must use the actual or effective notional amount when determining potential future exposure;

(ii) nil, where the credit exposure on single currency floating/floating interest rate swaps would be evaluated solely on the basis of their marked-to-market value; or

(iii) for contracts with multiple exchanges of principal, the sum of the remaining payments.

Nuclear Risk

Nuclear risk is not a separate class of insurance. The physical damage portion of nuclear risk coverage must be reported as property insurance, and the third-party liability portion must be reported as liability insurance.

Policy Dividends

Amounts paid to participating policyholders as determined by the insurer, and as prescribed by the insurance contract.

Premium Deficiency

A premium deficiency exists where the unearned premiums will not be sufficient to discharge all the expected liabilities that will accrue to the policies, including all expenses associated with the servicing of the policies.

Other Definitions (cont'd)

Private Passenger Auto excluding Farmers (PPAxF)

PPAxF is defined as a combination of type of business 0, 1, 4, 5, 8, 9 and type of business 1-19. Other personal-use vehicles are classified as non-private passenger. All commercial vehicles including public-use vehicles are to be classified as non-private passenger.

Rating Refunds

Refer to the definition of **Experience Rating Refunds.**

Reciprocal Insurance Exchanges

A group of subscribers exchanging reciprocal contracts of indemnity of inter-insurance with each other through a principal attorney as defined in some provincial jurisdictions.

Registered and Unregistered Insurer

The terms "registered" and "unregistered" are relevant in determining whether credit can be taken for reinsurance placed by federally regulated insurers and provincially incorporated insurers, respectively.

Please refer to the MCT Guideline for further clarification.

- Provincially Incorporated Insurers:

Registered insurers in a particular jurisdiction are insurers that are licensed in that jurisdiction. Certain regulators will also accept (re)insurers not licensed in their jurisdiction, but incorporated and licensed in another jurisdiction, as registered. Please verify with your primary regulator.

Unregistered insurers are insurers not licensed by one or more provincial regulators, and are not federally registered.

Regulator

The federal, provincial or territorial government agency responsible for the control and regulation of the insurance industry under its jurisdiction. The primary regulator is the regulator in the jurisdiction under which the insurer (a) obtained its order to carry on business; or (b) was incorporated.

Other Definitions (cont'd)

Retrospective Rating Credits

Refer to the definition of **Experience Rating Refunds**.

Salvage and Subrogation Recoverable

Salvage is the residual value that belongs to the insurer as a result of paying an insured's claim for the property covered by a policy issued by the insurer.

Subrogation is the assumption by an insurer of an insured's legal right to collect damages.

Short-Term Investments

Includes items such as treasury bills, commercial paper, short-term unsecured promissory notes issued by financial institutions and industrial corporations, interest-bearing deposits with a deposit-taking institution, bank deposit certificates, trust company guaranteed investment certificates, bonds and debentures.

Significant Dependencies

Examples include 10% or more of total premiums from one source; fundamental operations or systems provided by others (claims, information technology, policy issuance, etc.).

Structured Settlements

Refer to "Section IV - Special Topics."

Subordinated Indebtedness

Includes all indebtedness of the insurer that, in the event of the insolvency or winding-up of the insurer, are subordinate to all policy liabilities of the insurer and all other liabilities except those that rank equally with, or are subordinate to, such indebtedness.

Refer to the MCT Guideline for further information.

Other Definitions (cont'd)

Subsidiary

In accordance with IFRS, a subsidiary is an entity, including an unincorporated entity such as a partnership, that is controlled by another entity (known as the parent).

Substantial

Any share transfer involving 10% or more of the voting rights or any transfer of shares that result in a change of control of the insurer.

Substantial Investment

For federally registered insurers, section 10 of the *Insurance Companies Act* (ICA) defines a substantial investment as follows:

- "the voting rights attached to the aggregate of any voting shares [owned] exceed 10 per cent of the voting rights attached to all of the outstanding voting shares;"

  or

- "the aggregate of any shares" which are owned "represents ownership of greater than 25 per cent of the shareholders' equity."

Subsection 495(4) of the ICA provides that a property and casualty insurance company wanting to acquire or increase a substantial investment in a financial institution must control the financial institution (that is, must have more than 50% of the votes to elect directors), except as permitted under subsection 495(5).

For provincially incorporated insurers, please consult with your primary regulator for any jurisdictional differences.

UCAE

Refers to Unpaid Claims and Adjustment Expenses (including IBNR).

Unearned Commissions

The estimated amount of commission revenue on ceded premiums relating to the coverage period beyond the current year end. Unearned commissions arising from ceded business must not be reduced by deferred commissions arising from direct and assumed business, and must be estimated by class of insurance.

Other Definitions (cont'd)

Unrecognized (Assets and Liabilities)

Assets and liabilities that are not recognized under applicable accounting standards and are off balance sheet.

Unregistered Insurer (Company)

Refer to the definition under **Registered and Unregistered Insurers**.

Unregistered Reinsurer

Refer to the definition under **Registered and Unregistered Insurers**.

SECTION IV

Facility, Facility Association (FA), FA Risk Sharing Pool (FARSP) and *Plan de répartition des risques* (P.R.R.)

The Facility, the FA, the FARSP and the P.R.R. of the *Groupement des assureurs automobiles* are distinct organizations with similar functions.

Premiums, commissions and losses relating to automobile insurance policies transferred to the Facility or to the P.R.R. are to be treated in the insurer's books as negative direct business. Premiums and commissions that have not actually been accepted by the Facility or the P.R.R. at its closing date must be entered into each insurer's books as direct premiums and commissions.

Premiums, commissions and losses transferred to the insurer, according to the allocation made by the Facility or the P.R.R., must be entered as direct business in the insurer's books.

Similarly, premiums and losses received from the FA must also be reported as direct business.

Insurers participating in the P.R.R. are required to make the following adjustments in their books:

(i) Set up a provision for the insurer's portion of the total unearned premiums as at year end on automobile insurance policies transferred to the P.R.R. and accepted as at November 30.

(ii) Set up a provision for the insurer's portion of the total losses reported or unreported and incurred in the last month of the statement year on policies transferred to the P.R.R. as at year end.

(iii) Set up, as receivable from the P.R.R., losses paid on policies that the insurer has transferred to the P.R.R. whether they have been accepted or not as at year end.

Insurers participating in the Facility, the FA and the FARSP should enter into their books an estimate of the premiums written and the losses paid after the organizations' closing dates.

Facility, FA, FARSP and P.R.R. (cont'd)

The following table outlines the details for each entity:

ORGANIZATION	YEAR END	# MONTHS ACCRUAL
Facility	Oct. 31	2
Facility Association	Oct. 31	2
FA Risk Sharing Pool	Oct. 31	2
Plan de répartition des risques	Nov. 30	None required
Unsatisfied Judgement Recovery Fund	Cash basis	None required

The organizations provide the calculations of various provisions and estimates needed to make the above-noted adjustments.

The Facility, the FA, the FARSP, the P.R.R. and the Unsatisfied Judgement Recovery Fund amounts must be included under automobile statistics. At the end of each year, the fund managers will provide insurers with the automobile liability figures representing:

(i) the unpaid assessments for claims paid by the Unsatisfied Judgement Recovery Fund in the year of account; and

(ii) an estimate of the claims awaiting settlement by the funds.

These figures must be included in a worksheet supporting line 19 of page 60.30 for the examiner's review. The Unsatisfied Judgement Recovery Fund has been replaced in Quebec by the *Régie de l'assurance automobile du Québec*.

Letters of Credit / Deposits of Reinsurers

Letters of Credit

For Canadian insurers, to a limited extent, regulators are prepared to recognize approved letters of credit as security maintained in Canada for purposes of reducing the capital otherwise required for unregistered reinsurance.

For Foreign insurers, to a limited extent, regulators are prepared to recognize approved letters of credit as security maintained in Canada for purposes of reducing the assets and margin otherwise required for unregistered reinsurance or a self-insured retention and the total value of assets otherwise required to be maintained in Canada.

Refer to "Section V - Jurisdictional Requirements" for more information on federal requirements and the provincial requirements of Quebec and Ontario. Please also refer to "Section VI - Detailed Instructions" for assistance in completing page 70.38/70.39 and to obtain additional guidance with respect to letters of credit.

Deposits of Reinsurers

Deposits provided by unregistered reinsurers may also be used to reduce the capital/margin otherwise required for unregistered reinsurance, provided that such deposits materially reduce the risk associated with the reinsurer's credit quality.

For additional information on how to complete page 70.38/70.39, refer to "Section VI - Detailed Instructions."

Role of the Chief Agent and Record Keeping Requirements

Please refer to OSFI's Guideline E-4A.

Self-Insured Retention

Self-insured retention (SIR) represents the portion of a loss that is payable by the policyholder, either to the insurer directly or to an intermediary. In some cases, SIRs may be included in the policy declaration or in an endorsement to the policy, stipulating that the policy limit applies in excess of the SIR. When policy wordings are controlled by provincial statute, the SIR arrangement is usually the subject of a separate agreement between the insurer and the policyholder.

Whether the insurer has to pay the entire claim to the policyholder or to a third party (either in accordance with the terms of the policy or the separate agreement), the amount of the SIR portion of the unpaid claim must be reported on page 20.20, line 22 as "Self-Insured Retention (SIR) portion of unpaid claims" with the equivalent amount recoverable reported as an "Other Recoverables" on page 20.10, line 37.

To admit SIR recoverables for statutory test purposes, regulators must be satisfied with the collectibility of the recoverables. Regulators may require acceptable collateral to ensure the collectibility of the recoverables. Any acceptable collateral, for example letters of credit, is subject to a capital charge based on the credit rating of the issuing/confirming bank and the term to maturity of the letter of credit on page 30.77. The total capital requirement from page 30.77 is to be reported on page 30.70, line 50.

Appropriate reserves, including a reasonable IBNR provision, must be maintained with respect to SIR accounts. The adequacy of these reserves should be addressed in the insurer's actuarial report.

Structured Settlements

A structured settlement refers to a contractual arrangement whereby a third party makes periodic payments to a claimant of an insurer.

The periodic payments are normally funded through the purchase by the insurer of an annuity from a life insurance enterprise and are usually arranged so that the payments are tax free in the hands of the claimant.

The insurer may have to report a financial liability and a financial asset on its balance sheet, depending on the type of contractual arrangement, and must disclose the information required in its notes to the financial statements.

There are essentially two types of structured settlements.

Type 1

Type 1 structured settlements have the following characteristics:

a) An annuity is purchased by an insurer who is named as the owner. There is an irrevocable direction from the insurer to the annuity underwriter to make all payments directly to the claimant.

b) Since the annuity is non-commutable, non-assignable and non-transferable, the insurer is not entitled to any annuity payments, and there are no rights under the contractual arrangement that would provide any current or future benefit to the insurer.

c) The insurer is released by the claimant to evidence settlement of the claim amount.

d) The insurer remains liable to make payments to the claimant in the event and to the extent the annuity underwriter fails to make payments under the terms and conditions of the annuity and the irrevocable direction given.

Under this type of structured settlement arrangement, the insurer does not have to recognize a liability to the claimant, nor does it have to recognize the annuity as a financial asset. However, the insurer is exposed to credit risk by guaranteeing the obligation of the annuity underwriter to the claimant.

The insurer should disclose in its notes to the financial statements the terms and conditions, the credit risk and the fair value of this financial guarantee.

Structured Settlements (cont'd)

Any gain or loss should be recorded as an adjustment of incurred claims expense.

The insurer also should not recognize a financial asset at the time of purchase where the terms of the annuity make it commutable in the event the liability to the claimant becomes fully settled or otherwise discharged. In these circumstances, the insurer could record a gain amounting to the residual value after the liability is fully settled.

In this case, the contingent gain should be assessed for disclosure in the notes with respect to its amount, nature and terms and conditions.

Type 2

Type 2 structured settlements differ from Type 1 in that:

a) the annuity is commutable, assignable or transferable; that is to say, there is some form of reversionary interest or continuing right to a benefit for the insurer; and

b) a legal release is not necessarily obtained from the claimant.

The commutation rights of the insurer have the potential for terminating the claimant's right to future payments in advance of the annuity being exhausted.

The extent of the rights held by the insurer sometimes indicates that the insurer has contracted with the annuity underwriter to provide only administrative services with respect to the periodic payments.

Under this type of arrangement, the financial liability must be recognized on the insurer's balance sheet, and the annuity must be recognized as a financial asset.

The annuity should be carried initially at its cost to the insurer, and the liability should be measured in the same manner as other outstanding claim liabilities of similar type.

The insurer should disclose in its notes to the financial statements the terms and conditions, the credit risk and the fair value of the annuities recognized as assets on the balance sheet.

Refer to the section on federal guidelines and bulletins in "Section V - Jurisdictional Requirements."

SECTION V

Insurers must accommodate for the differences in legislation from jurisdiction to jurisdiction in Canada.

Each jurisdiction's requirements can now be found in this section, including filing requirements/dates and mailing addresses.

Also included are the statutory references that may be used as authoritative sources for the completion of each jurisdiction's filing.

Regulators

Alberta

Superintendent of Insurance
Alberta Government
402 Terrace Building
9515-107 Street
Edmonton, AB T5K 2C3

Telephone: (780) 643-2237
Fax: (780) 420-0752
https://www.alberta.ca/treasury-board-and-finance.aspx

British Columbia

Superintendent
Financial Institutions Commission
2800-555 West Hastings
Vancouver, BC V6B 4N6

Telephone: (604) 660-3555
Fax: (604) 660-3365
www.fic.gov.bc.ca

Manitoba

Deputy Superintendent of Financial Institutions - Insurance
Financial Institutions Regulation Branch
207 – 400 St. Mary Avenue
Winnipeg, MB R3C 4K5

Telephone: (204) 945-2542
Fax: (204) 948-2268
www.mbfinancialinstitutions.ca

New Brunswick

Superintendent of Insurance
Financial and Consumer Services Commission
225 King Street, Suite 200
Fredericton, NB E3B 1E1

Telephone: (866) 933-2222
Fax: (506) 453-7435
www.fcnb.ca

Newfoundland and Labrador

Superintendent of Insurance
Service NL
West Block Confederation Bldg., 2nd Floor
Prince Philip Drive, P.O. Box 8700
St. John's, NL A1B 4J6

Telephone: (709) 729-4189
Fax: (709) 729-3205
www.servicenl.gov.nl.ca

Regulators (cont'd)

Northwest Territories

Superintendent of Insurance
Treasury Division
Department of Finance
Government of the Northwest Territories
P.O. Box 1320
4922 - 48 Street, 3rd Floor
Yellowknife, NT X1A 2L9

Telephone: (867) 920-8056
Fax: (867) 873-0325
www.fin.gov.nt.ca/taxation/insurance

Nova Scotia

Superintendent of Insurance
Department of Finance
Financial Institutions
P.O. Box 2271, 4th Floor
1723 Hollis Street
Halifax, NS B3J 1V1

Telephone: (902) 424-6331
Fax: (902) 424-1298
www.novascotia.ca/finance/en/home/insurance/superintendantofinsurance/default.aspx

Nunavut

Superintendent of Insurance
Department of Finance
Government of Nunavut
PO Box 2260
Iqaluit, NU X0A 0H0

Telephone: (867) 975-5889
Fax: (867) 975-5845
http://www.gov.nu.ca/finance/information/download-forms-and-publications

Ontario

Chief Executive Officer
Financial Services Regulatory Authority of Ontario
5160 Yonge Street
Box 85, 17th Floor
North York, ON M2N 6L9

Telephone: (416) 250-7250
Toll-Free: (800) 668-0128
www.fsrao.ca

Regulators (cont'd)

Québec

Superintendent of Solvency
Autorité des marchés financiers
Place de la Cité, Cominar Tower
2640 Laurier Boulevard, 4th floor
Québec, QC G1V 5C1

Telephone: (418) 525-0337 ext. 4501
Fax: (418) 525-4509
www.lautorite.qc.ca

Prince Edward Island

Superintendent of Insurance
Department of Environment, Labour and Justice
95 Rochford Street
P.O. Box 2000
Charlottetown, PEI C1A 7N8

Telephone: (902) 368-4550
Fax: (902) 368-5283
www.gov.pe.ca

Saskatchewan

Superintendent of Insurance
Financial and Consumer Affairs Authority of Saskatchewan
1919 Saskatchewan Drive, 6th Floor
Regina, SK S4P 4H2

Telephone: (306) 787-7881
Fax: (306) 787-9006
www.gov.sk.ca

Yukon

Superintendent of Insurance
Professional Licensing & Regulatory Affairs C-5
Government of Yukon
Box 2703
Whitehorse, YT Y1A 2C6

Telephone: (867) 667-5111
Fax: (867) 667-3609
www.yukon.ca

Federal

Regulatory Data Management
Office of the Superintendent of Financial Institutions Canada
255 Albert Street, 12th Floor
Ottawa, ON K1A 0H2

Telephone: (613) 990-1889
Fax: (613) 991-6118
www.osfi-bsif.gc.ca

Newfoundland and Labrador

Other specific instructions enabling insurers to meet Newfoundland and Labrador's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Companies Act, R.S.N.L. 1990, chapter I-10

Language

Contact the regulator for information on language requirements.

Signature Requirements

There is no section in the *Insurance Companies Act* of the province of Newfoundland and Labrador stating specifically who must verify the Annual Return.

Actuary's Report

Only Insurers incorporated in the Province of Newfoundland and Labrador are required to submit a full copy of the Actuary's Report with their annual filing. The actuary's Certificate of Opinion is considered an integral part of the annual filing, and failure to include it would render the filing incomplete.

Foreign insurers are not required to file a copy of their Actuary's Report.

Statutory Filings by Federally Registered Insurers

Federally registered insurers submit their statutory filings only to the Office of the Superintendent of Financial Institutions Canada.

Statutory Filings by Insurers Incorporated in a Province Other than Newfoundland and Labrador

Only the following pages of the P&C statutory filings are required to be filed:
Pages 67.10 to 67.31 and 93.30 to 93.50

Newfoundland and Labrador (cont'd)

Filing Requirements

Insurers licensed in the province of Newfoundland and Labrador, other than insurers incorporated in the province of Newfoundland and Labrador								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing - Canadian	February 28						1*	* Extraprovincial insurers are required to provide only pages 67.10 to 67.31 and 93.30 to 93.50. Not required for federally registered insurers due to information-sharing agreement with OSFI.
P&C Annual Filing - Foreign	February 28							Not required for federally registered insurers due to information-sharing agreement with OSFI.
P&C Quarterly Filing - Canadian	n/a							
P&C Quarterly Filing - Foreign	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							

Newfoundland and Labrador (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of Newfoundland and Labrador, other than insurers incorporated in the province of Newfoundland and Labrador (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

Newfoundland and Labrador (cont'd)

Filing Requirements (cont'd)

Insurers incorporated in the province of Newfoundland and Labrador								
		PwC						
P&C Returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28	x					1	
P&C Quarterly Filing	Within 45 days	x					1	
Auditor's Report to the Superintendent	February 28						1	
Auditor's Report for the Minimum Capital Test (MCT)	February 28						1	
Appointed Actuary's Report (AAR)	February 28						1	
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	February 28						1	
Audited financial statements	February 28						1	

Prince Edward Island

Other specific instructions enabling insurers to meet Prince Edward Island's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Act, R.S.P.E.I. 1988, chapter I-4

Language

Contact the regulator for information on language requirements.

Actuary's Report

Insurers are required to file only a Certificate of Opinion with the condition that a copy of the Actuary's Report be available at any time upon request.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

Statutory Filings by Federally Registered Insurers

Federally registered insurers are only required to file pages 67.10 to 67.31 and 93.30 to 93.50 of the P&C Annual filings.

Prince Edward Island (cont'd)

Filing Requirements

Insurers incorporated in the province of Prince Edward Island								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28	*					1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							

* Required if produced.

Prince Edward Island (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Prince Edward Island								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing - Canadian	February 28						1	Pages 67.10 to 67.31 and 93.30 to 93.50 only
P&C Annual Filing - Foreign	February 28						1	Pages 67.10 to 67.31 only
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							

Prince Edward Island (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Prince Edward Island (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Business plan	n/a							
Worldwide financial statements	n/a							
Audited financial statements	n/a							

Nova Scotia

Other specific instructions enabling insurers to meet Nova Scotia's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Act, R.S.N.S. 1989, chapter 231
Insurance Premiums Tax Act, R.S.N.S. 1989, chapter 232
Licensing of Insurers Regulations, N.S. Reg 142/90

Language

Contact the regulator for information on language requirements.

Actuary's Report

Insurers are not required to file their Actuary's Report with the condition that a copy be available at any time upon request.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

Statutory Filings by Federally Registered Insurers

Federally registered insurers are only required to file pages 10.10, 67.10, 67.20, 67.30, 93.30, 93.50, 99.10, 99.11 and 99.15 of the P&C Annual filings.

Nova Scotia (cont'd)

Filing Requirements

Insurers incorporated in the province of Nova Scotia								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	March 31	*					1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent (Can. P&C)	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							

* Required if produced.

Nova Scotia (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Nova Scotia								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing - Canadian	March 31						1	Page 10.10, 67.10, 67.20, 67.30, 93.30, 93.50 and 99.10 only
P&C Annual Filing - Foreign	March 31						1	Page 10.10, 67.10, 67.20, 67.30, 99.11 and 99.15 only
P&C Quarterly Filing - Canadian	n/a							
P&C Quarterly Filing - Foreign	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							

Nova Scotia (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Nova Scotia (cont'd)					
		PwC			

P&C returns	Due dates	ASCII file	Text ".txt" file	Transmittal form	Special Excel file	Other electronic file	Hard copy	Other comments
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

New Brunswick

Other specific instructions enabling insurers to meet New Brunswick's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Act, R.S.N.B. 1973, chapter I-12
Premium Tax Act, R.S.N.B. 1973, chapter P-15

Language

Filings in either official language are acceptable.

Actuary's Report

Insurers are required to file only a Certificate of Opinion with the condition that a copy of the Actuary's Report be available at any time upon request.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

New Brunswick (cont'd)

Filing Requirements

Federally and extraprovincially registered insurers licensed to do business in New Brunswick								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing - Canadian	March 31	*					1	
P&C Annual Filing - Foreign	March 31	*					1	
P&C Quarterly Filing - Canadian	n/a							
P&C Quarterly Filing - Foreign	n/a							
Auditor's Report to the Superintendent	March 31						1	
Auditor's Report for the Minimum Capital Test (MCT)	March 31						1	
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	March 31						1	
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	March 31						1	
AAR - External Review Report	n/a							

New Brunswick (cont'd)

Filing Requirements (cont'd)

Federally and extraprovincially registered insurers licensed to do business in New Brunswick (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

* Required if produced.

Quebec

Under the *Act respecting insurance*, CQLR, c. A-32, (the "Act"), every insurer is required to file with the Autorité des marchés financiers (the "AMF" or the "Authority") in such form as the AMF may determine, the documents and information it requires.

The AMF will no longer send a letter each year listing the documents and information required under the Act. This information will now be available only through the AMF Bulletins and postings on the AMF website.

For further information, consult the Notice on filing for P&C Insurers on the AMF website at:
https://lautorite.qc.ca/en/professionals/insurers/disclosures/pc-insurance/

Legislation

Business Corporations Act, CQLR, chapter S-31.1
An Act respecting insurance, CQLR, chapter A-32

Regulation under the Act respecting insurance, CQLR, chapter A-32, r.1

Signature Requirements

In accordance with section 309 of the Act, the two persons signing the Annual Return must be directors of the insurer.

Quebec (cont'd)

Special Reporting

Every insurer licensed to write business in Quebec, whether incorporated under the laws of Quebec, the laws of Canada or some other jurisdiction, must:

(a) for Canadian insurers, complete pages 10.16, 60.10, 80.20, 93.35, 95.10 and 95.20 of the Annual filings;
(b) for foreign insurers, complete pages 10.16, 60.10, 80.20, 85.40, 85.45, 85.60 and 85.65 of the Annual filings;
(c) for Canadian insurers, complete page 93.35 if insurer has written, during the current year or in a prior year, policies for a term of more than 12 months. The data reported on page 93.35 must include
   - for policies for a term not exceeding 12 months
     - total premiums for policies written during the current year;
   - for policies for a term of more than 12 months
     - only the portion of premiums applicable to the twelve months during the current year.

A copy of the major letters of credit and/or confirmation from trustees of deposits held for the account of the insurer (reported on page 70.40) must be attached to the Annual Return.

Loans and Advances to Subsidiaries, Associates and Joint Ventures (with Greater than 10% Ownership Interest)

Quebec-incorporated insurers must show loans and advances to subsidiaries, associates and joint ventures (with greater than 10% ownership interest) on page 50.32. See the instructions for page 50.32 in the document "Section VI - Detailed instructions."

Quebec (cont'd)

Exhibits NOT Required

The following exhibits or sections of exhibits need not be completed by Quebec-incorporated insurers that transact insurance in Quebec only.

Page	Exhibit
10.15	Directors
10.17	Annual Corporate Information
60.21	Claims Incurred – Undiscounted
60.40	Net Claims and Adjustments Expenses – Run Off
67.31	Provincial and Territorial Exhibit of Claims Incurred Including Adjustment Expenses – Undiscounted
90.70	Reinsurance Ceded – Out of Canada
93.11	Provincial and Territorial Exhibit of Claims Incurred Including Adjustment Expenses – Undiscounted
93.60	Net Claims and Adjustments Expenses – Run Off

Actuary's Report

Pursuant to sections 298.14 and 309 of the Act, every insurer authorized to underwrite "damage" (property and casualty) insurance in Quebec must attach an actuary's Expression of Opinion on the valuation of the provisions and reserves to its Annual filing.

A copy of the Actuary's Report that establishes and presents the provisions and reserves must be forwarded to the Autorité des marchés financiers upon request.

The actuary will have to include a description of the assumptions and methods used in the valuation of the said reserves or provisions and also state and justify the criteria that have served as the basis for choices made.

Moreover, the AMF may require certain insurers to include other information in the report.

Insurers with charters from outside Quebec that transact insurance in Quebec must file a copy of the Actuary's Report filed with their home jurisdiction.

A copy of the resolution of the board of directors concerning the appointment of the actuary must be forwarded to the AMF within 10 days of the actuary's initial appointment or at the change of the actuary.

Quebec (cont'd)

Actuary's Report (cont'd)

For foreign insurers, the Actuary's Report must contain a certificate testifying that:

(i) the reserves maintained by the insurer to guarantee its obligations toward the insured are not less than the reserves required by the Act or by its "Act of Incorporation", if it is more restrictive;

(ii) the reserves of provisions are calculated on the basis of appropriate assumptions with respect to the circumstances of the insurer and its contracts of insurance; and

(iii) the reserves make good and sufficient provision to cover all obligations under such contracts.

Auditor Report

For Quebec-incorporated insurers, the report is to be addressed to the AMF. All other insurers licensed in Quebec must submit a copy of the Auditor Report addressed to their regulator.

In addition, canadian insurers are expected to provide the AMF with a copy of their Annual Report including the Auditor Report to the shareholders and members. Foreign insurers are expected to provide the AMF with a copy of the Annual Report for their total business.

Quebec (cont'd)

Letters of Credit

Letters of credits may be used to reduce capital otherwise required for unregistered reinsurance or a self-insured retention, this up to a prescribed limit, and are subject to a capital charge as specified in the Autorité's *Guideline on capital adequacy requirements*. The limit is applicable to all insurers licensed in Quebec. General requirements concerning letters of credit are set out below:

(i) Letters of credit must be in Canadian dollars and payable in Canada. Letters of credit must be issued by a Canadian bank or confirmed by a Canadian bank if issued by a foreign bank;

(ii) They must be for a fixed term, at least one year;

(iii) They must be for a stipulated dollar amount;

(iv) They must be irrevocable except with at least three months notice to the Regulator. This condition can be satisfied either by a provision in letter of credit or by a letter of confirmation from the issuing bank; and

(v) The issuing bank and the confirming bank must not have any claim on the assets of the Canadian insurance company as security for the letters of credit.

A copy of the major letters of credit must be sent with the Annual Return.

Financial Statements of Subsidiaries and Associates

Insurers licensed in Quebec must file a copy of their subsidiaries' and associates' financial statements (where required) with their Annual Return, for those subsidiaries and associates reported on page 92.10, line 40.

Minimum Capital Test (MCT) – (Pages 30.61 to 30.92)

Instructions for completing these pages for insurers incorporated in Quebec are in the *guideline on capital adequacy requirements* available on the AMF's website.

Consequently, instructions in Section VI do not apply to those insurers.

Quebec (cont'd)

Registered insurer\reinsurer:

To be deemed approved, the insurer must be approved in Quebec or another province, or subject to federal regulation.

Registered reinsurer: A reinsurance agreement is deemed registered if it was assumed by an insurer constituted under the laws of Quebec, of another province, or of Canada, and in this case, licensed by one or more provincial regulator(s). A reinsurance agreement is also deemed registered if it was assumed by the branch of a foreign company authorized by the federal authority and licensed by one or more provincial regulator(s), and if the branch maintains assets guaranteeing the fulfilment of its obligations under the agreement.

Filing Requirements

Please consult the Notice on the AMF website.

Ontario

Other specific instructions enabling insurers to meet Ontario's requirements may be circulated by the Chief Executive Officer to the appropriate insurers prior to year end.

Legislation

Corporations Act, R.S.O. 1990, chapter C.38
Insurance Act, R.S.O. 1990, chapter I.8

Regulations to the *Insurance Act*, specifically:
Regulation 669, Financial Statements

Guidelines

Bulletin 13/92 - *Use of the Canadian Depository for Securities Limited*
Bulletin 01/02 - *Investments by Insurers Guideline*
Bulletin 08/04 - *Minimum Capital Test for P&C Insurance Companies*

Earthquake

Refer to the OSFI's *Earthquake Exposure Sound Practices* guidelines.

Letters of Credit

In general, letters of credit may be used to offset the reserve for unregistered reinsurance to the extent of 10% of the total amount of the unearned premiums and outstanding losses recoverable from assuming reinsurers.

The Chief Executive Officer must be made aware of the details of letters of credit from affiliated unregistered reinsurers.

Ontario (cont'd)

Discounting

Starting with the 2003 Annual Return, actuarial liabilities are required to be reported on a discounted basis. The discounting requirement will apply to Ontario-incorporated property and casualty insurance companies and to reciprocal exchanges in Ontario for which the Actuary's Report is required.

Language

Filings in either official language are acceptable.

Statutory Filings by Federally Registered Insurers

In accordance with section 102 of the Ontario *Insurance Act*, federally registered insurers licensed in Ontario must submit their statutory filings only to the Office of the Superintendent of Financial Institutions Canada.

Ontario FOIPOPA Consent Form

The *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, chapter F.31 (FOIPOPA) provides that where information about an individual is not collected directly from the individual, the collection is lawful only if, among other things, it is authorized by a statute. Further, whenever information is collected about an individual, that individual must be informed of the legal authority for its collection and the principal purpose for which the personal information is intended to be used.

Since the Annual Return includes personal information, the Consent and Notification Form issued pursuant to the FOIPOPA must be completed by all provincially incorporated insurers. The insurer must provide a copy to each individual named in page 10.15 of the Annual Return. Since the insurer is aware of many of these individuals, it is strongly recommended that the insurer begin the notification process well in advance of the filing due date. The certificate is to be signed by the same person who signs the Annual Return.

Ontario (cont'd)

Actuary's Report and Auditor Report

Actuary's Report

Subsection 121.13 of the *Insurance Act* (Part II.1) requires that every insurer incorporated in Ontario, except those described in subsection 121.20, must submit with its Annual Return a valuation report by the appointed actuary on his/her evaluation of actuarial and other policy liabilities of the insurer. The exception under subsection 121.20 applies if the insurer is a mutual insurance corporation that is a member of the Fire Mutuals Guarantee Fund.

The Report must be addressed to the Chief Executive Officer, Financial Services Regulatory Authority of Ontario (FSRA), and must comprise a certificate and a report, both of which must be signed. Detailed instructions for completing the Report were forwarded to the insurers and will be updated separately through correspondence with the companies.

Note: Federally regulated insurers are not required to file an Actuary's Report with FSRA.

Auditor Report

All insurers incorporated in Ontario are required to have their Auditor Report addressed to the Chief Executive Officer, FSRA. All other insurers licensed in Ontario should refer to the general instructions in Section II.

All provincially incorporated insurers licensed in Ontario are expected to provide the FSRA with a copy of their Annual Report including the Auditor Report to the shareholders and members when published.

Ontario (cont'd)

General Information

All Ontario-incorporated insurers must complete the general information pages 10.10 to 10.60.

Except for the insurers prescribed in section 102(9) of the Act or in the Regulations, all Ontario-incorporated insurers must complete the statutory compliance pages for the MCT (30.70, 30.71 and 30.73). The MCT is to be completed using the Superintendent's guideline 08/04.

Working Papers

In accordance with section 443 of the Act, insurers licensed in Ontario are required to maintain appropriate working papers to support the information contained in the Annual Return.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors and by the secretary or manager of the insurer.

Securities Lending

Securities lending is prohibited for companies incorporated in Ontario.

Financial Statements of Subsidiaries

Ontario-incorporated insurers should have a copy of the current financial statements of each subsidiary available at head office.

Ontario (cont'd)

Filing Requirements

Insurers incorporated in the province of Ontario								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28	x			x	*		
P&C Annual Reinsurers *(R)*	April 15	x			x	*		
P&C Quarterly Filing	Within 45 days	x			x	*		
Auditor's Report to the CEO	February 28					*		
Auditor's Report for the Minimum Capital Test (MCT)	February 28					*		Reciprocals are not required to file this.
Appointed Actuary's Report (AAR)	February 28					*		
AAR - FCT	September 30					*		Reciprocals are not required to file this.
AAR - External Review Report	February 28					*		
Unpaid Claims and Loss Ratio Exhibits	February 28					*		
Business plan	February 28					*		
Audited financial statements	February 28					*		

(R) Insurers whose certificates of registry are limited to reinsurance.
* Pdf format preferred for electronic copies. Signed copies should be provided in pdf format.

Ontario (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Ontario								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28	x			x	*		
P&C Annual Filing - Reinsurers *(R)*	April 15	x			x	*		
P&C Quarterly Filing	Within 45 days	x			x	*		
Auditor's Report to the CEO	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							

Ontario (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Ontario (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

(R) Insurers whose certificates of registry are limited to reinsurance.
* PDF format preferred for electronic copies. Signed copies should be provided in PDF format.

Manitoba

Other specific instructions enabling insurers to meet Manitoba's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

The Insurance Act, C.C.S.M., chapter I.40
The Marine Insurance Act, C.C.S.M., chapter M.40
The Insurance Corporations Tax Act, C.C.S.M., chapter I.50

Regulations to *The Insurance Act*:
Insurance Company Classes of Insurance Regulation
Insurance Companies Financial Requirements Regulation

Language

Filings in either official language are acceptable.

Actuary's Report

Insurers are not required to file their Actuary's Report with the condition that a copy be available at any time upon request.

Statutory Filings by Federally Registered Insurers

In accordance with section 84 of the Act, federally registered insurers must submit their statutory filings only to the Office of the Superintendent of Financial Institutions Canada.

Insurers Other than Provincial Insurers and Reciprocal Insurance Exchanges

These insurers must produce a report that sets out the particulars of their business in Manitoba during the year (section 84). To meet this requirement, P&C insurers must file pages 67.10, 67.30, 93.30 and 93.50 of the P&C Returns.

Manitoba (cont'd)

Filing Requirements

Insurers incorporated in the province of Manitoba								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28						1	
P&C Annual Filing - Reinsurers *(R)*	March 15						1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							

(R) Insurers whose certificates of registry are limited to reinsurance.

Manitoba (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Manitoba								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28						1	
P&C Annual Filing - Reinsurers *(R)*	March 15						1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							

Manitoba (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Manitoba (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

(R) Insurers whose certificates of registry are limited to reinsurance.

Saskatchewan

Other specific instructions enabling insurers to meet Saskatchewan's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

The Saskatchewan Insurance Act, R.S.S. 1978, chapter S-26

Regulations to *The Saskatchewan Insurance Act*:
Saskatchewan Insurance Regulations, 2003

Discounting

Actuarial liabilities are required to be reported on a discounted basis. The discounting requirement will apply to Saskatchewan-incorporated P&C insurance companies and to reciprocal exchanges in Saskatchewan for which the Actuary's Report is required.

Filing Requirements

Provincially Incorporated Insurers and Reciprocal Insurance Exchanges

1. Complete Annual Filings including the auditor's opinion (section 86).
2. Actuary's Report if required by the Superintendent.
3. Audited financial statements with the auditor's opinion.
4. Audited financial statements for any subsidiaries with the auditor's opinion.
5. If subsidiaries are regulated financial institutions, the filings with the primary regulators.

In addition to the above, all reciprocal insurance exchanges need to file the following:

6. The name and address of the attorney for the reciprocal insurance exchange.
7. The particulars respecting the reserve fund and guarantee fund maintained by the reciprocal insurance exchange.

Saskatchewan (cont'd)

Extraprovincial Insurers

Extraprovincial insurers must file pages 10.10 (corporate information), 99.10 (Non-Quebec Incorporated Insurer) and 99.20 (Quebec Incorporated Insurer) of the P&C Annual Supplement and pages 67.10 and 67.30, of the P&C Quarterly Return.

Federally Registered Insurers

Federally registered insurers are required to file only the *Federally Regulated Insurance Company Information* form provided by the Saskatchewan Superintendent of Insurance.

Filing Deadlines

All annual filings must be provided as follows:

1. If limited by the Superintendent to reinsurance only, 105 days after the financial year end (subsections 86(3) and 87(3)).

2. For all other insurers, 60 days after the financial year end (subsections 86(3) and 87(3)).

Language

Contact the regulator for information on language requirements.

Signature Requirements

For provincial insurers, the Annual filings must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors and by the secretary or manager of the insurer.

For reciprocal insurance exchanges, the Annual filings must be verified by the attorney-in-fact and a director appointed for the purposes by the board.

Saskatchewan (cont'd)

Filing Requirements

Insurers incorporated in the province of Saskatchewan and reciprocal insurance exchanges licensed in the province of Saskatchewan								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	Within 60 days	*					1	Reciprocal insurance exchanges also must provide the name of the attorney and the particulars of the reserve and guarantee funds calculation.
P&C Annual Filing - Reinsurers *(R)*	Within 105 days	*					1	
P&C Quarterly Filing - Canadian	Within 45 days						1	
P&C Quarterly Filing - Foreign	n/a							
Auditor's Report to the Superintendent	Within 60 days						1	
Auditor's Report for the Minimum Capital Test (MCT)	Within 60 days						1	
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	Within 60 days						1	
Appointed Actuary's Report (AAR)	Within 60 days						1	
AAR - FCT	See comment							Sooner of Dec. 31 or 30 days after board presentation.
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	See comment							To be filed with the Actuary's Report.
Business plan	n/a							
Audited financial statements	Within 60 days						1	
Worldwide financial statements	n/a							

* Required if produced.
(R) Insurers whose certificates of registry are limited to reinsurance.

Saskatchewan (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of Saskatchewan								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing - Canadian	Within 60 days							Extraprovincial insurers are required to provide only pages 10.10, 99.10 and 99.20 of the P&C Annual Supplement and pages 67.10 and 67.30, of the P&C Quarterly Return. Federally registered insurers satisfy the annual reporting requirement by submitting the information form provided by the Saskatchewan Superintendent of Insurance.
P&C Annual Filing - Reinsurers *(R)* - Canadian	Within 105 days							Extraprovincial insurers are required to provide only pages 10.10, 99.10 and 99.20 of the P&C Annual Supplement and pages 67.10 and 67.30, of the P&C Quarterly Return. Federally registered insurers satisfy the annual reporting requirement by submitting the information form provided by the Saskatchewan Superintendent of Insurance.
P&C Annual Filing - Foreign	Within 60 days/ 105 days *(R)*							Federally registered insurers satisfy the annual reporting requirement by submitting the information form provided by the Saskatchewan Superintendent of Insurance.
P&C Quarterly Filing	n/a							

Saskatchewan (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of Saskatchewan (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR – FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

* Required if produced.
(R) Insurers whose certificates of registry are limited to reinsurance.

Alberta

Legislation

Insurance Act, R.S.A. 2000, chapter I-3

Regulations to the *Insurance Act*: Regulations can be found on Alberta's website.

Guidelines and other Guidance

Refer to the Alberta Superintendent of Insurance's website for the Guidelines that are applicable to Property and Casualty Insurers and Reciprocal Insurance Exchanges.

Language

Annual Returns must be submitted in English.

Signature Requirements

Alberta incorporated insurers – Section 44(3)(f) of the *Insurance Act* states the Annual Return (affidavit on page 99.10) must be approved and signed by the president, vice-president or managing director or other director appointed for the purpose by the board of directors and by the secretary or manager of the company.

Reciprocal insurance exchanges – Section 91(3)(d) of the *Insurance Act* states that the Annual Return (affidavit on page 99.10) must be signed by the principal attorney and at least two members of the advisory board or committee of subscribers. Refer to Alberta's website for a copy of the affidavit containing three signature lines.

Alberta (cont'd)

Actuary's Report

Pursuant to section 44(3)(d) of the *Insurance Act*, Alberta-incorporated insurers licensed under this Act must submit, with the Annual Return, an opinion, in accordance with section 405.

The *Insurance Act* requires that two reports be submitted with the Annual Return, one in respect of premium reserves and one in respect of claim reserves. If the same person is signing both reports, there is no reason why the two reports cannot be combined into one document

The Actuary's report is required to include an Unpaid Claims and Loss Ratio Analysis Exhibit, consistent with the OSFI requirements.

Federally and extraprovincially incorporated insurers are not required to file their Actuary's Report.

Discounting of Reserves

Effective January 1, 2003, the reporting of actuarial liabilities on a discounted basis by Alberta-incorporated property and casualty insurance companies and reciprocal insurance exchanges is optional.

Insurers are expected to file on either a discounted or undiscounted basis consistently. Insurers who wish to change the basis on which they file must notify the Superintendent prior to making the change.

Format of the Actuarial Opinion and Report

The opinion should state the status of the signatory, his or her title, his or her relationship to the insurer, and, if not a Fellow of the Canadian Institute of Actuaries, how he or she qualifies.

Alberta (cont'd)

Auditor Report

Pursuant to section 43(1), all insurers licensed in Alberta must submit a copy of their audited financial statements within 180 days of the insurer's year end.

Alberta requires the following reports be filed with the Annual filings:

- Auditor Report addressed to the Alberta Superintendent of Insurance;
- Auditor Report for the Minimum Capital Test.

Annual Report

All Alberta incorporated insurers are expected to file a copy of their Annual Report including the Auditor's Report to the shareholders and members when published.

Financial Statements of Subsidiaries

A copy of the current financial statements of each subsidiary must be made available on request.

Security Interests

Refer to section 113 of the Alberta *Insurance Act*.

Alberta (cont'd)

Filing Requirements

Refer to the Alberta Superintendent of Insurance's website for instructions on electronic filing of annual returns.

- Alberta-incorporated insurers and reinsurers are required to file a fourth quarter P&C Return and an Annual Supplement in both ASCII and special excel file formats.
- All extra provincially incorporated insurers are required to file a fourth quarter P&C Return and an Annual Supplement in an ASCII file format.
- Federally registered insurers are required to file a fourth quarter P&C Return and Annual Supplement with the Office of the Superintendent of Financial Institutions Canada. This will satisfy the reporting requirement for the comparable period.

All filings must be received within 60 days after the company's fiscal year end, except for reinsurers, which must be received within 105 days after the company's fiscal year end.

Alberta only accepts electronic filings.

Insurers incorporated in the province of Alberta								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Fourth-quarter return	Within 60 days	x		x	x			A PDF copy of the signed affidavit should be embedded in the special Excel file.
P&C Annual Supplement	Within 60 days	x		x	x			A PDF copy of the signed affidavit should be embedded in the special Excel file.
P&C Quarterly Filing	Within 45 days	x		x	x			A PDF copy of the signed affidavit should be embedded in the special Excel file.
Auditor's Report to the Superintendent	Within 60 days					x		PDF format preferred.

Alberta (cont'd)

Filing Requirements (cont'd)

Insurers incorporated in the province of Alberta (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Auditor's Report for the Minimum Capital Test (MCT)	Within 60 days					x		PDF format preferred.
Appointed Actuary's Report (AAR)	Within 60 days					x		PDF format preferred.
AAR - FCT	See comment**					x		** Sooner of Dec. 31 or 30 days after board presentation; PDF format preferred.
AAR - Peer Review Report	Within 60 days					x		
Unpaid Claims and Loss Ratio exhibits	See comment**					x		**To be included in the Actuary's Report and filed within 60 days; PDF format preferred.
Audited financial statements	Within 60 days					x		PDF format preferred.
Alberta Reserve and Guarantee Fund worksheet	Within 60 days					x*		* Applicable to reciprocal insurance exchanges only.

Alberta (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of Alberta								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing – fourth-quarter and Annual Supplement	Within 60 days*****	x		x	x			* Extraprovincial insurers are required to provide an ASCII file, and federally registered insurers will satisfy the reporting requirement for the comparable period by filing with OSFI. A PDF copy of the signed affidavit should be embedded in a special Excel file.
P&C Annual Filing - Reinsurers *(R)* – fourth-quarter and Annual Supplement	Within 105 days*	x		x	x			* Extraprovincial insurers are required to provide only an ASCII file, and federally registered insurers will satisfy the reporting requirement for the comparable period by filing with OSFI. A PDF copy of the signed affidavit should be embedded in a special Excel file.
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	Within 180 days					x		PDF format preferred.
Auditor's Report for the Minimum Capital Test (MCT)	Within 180 days					x		PDF format preferred.

Alberta (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of Alberta (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other Electronic file**	**Hard copy**	**Other comments**
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	Within 180 days					x		PDF format preferred.
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - Peer Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Audited financial statements	Within 180 days					x		Please refer to the Alberta Superintendent of Insurance website for instructions on filing your financial statements electronically; PDF format preferred.
Alberta Reserve and Guarantee Fund worksheet	Within 60 days					x*		* Applicable to all reciprocals licensed in Alberta.
Worldwide financial statements	n/a							

(R) Insurers whose certificates of registry are limited to reinsurance.

British Columbia

For current instructions relating to British Columbia's filing requirements, please consult the website of the Financial Institutions Commission (FICOM) at www.fic.gov.bc.ca.

Legislation

Financial Institutions Act, R.S.B.C. 1996, chapter 141
Insurance Act, R.S.B.C. 2012, chapter 1
Business Corporations Act, S.B.C. 2002, chapter 57
Insurance Premium Tax Act, R.S.B.C. 1996, chapter 232

Regulations under the *Financial Institutions Act* (FIA) and the *Insurance Act* applicable to all insurance companies can be found on FICOM's website.

Registered and Unregistered Reinsurance

To be considered an authorized (re)insurer, the (re)insurer must be authorized in BC. To be considered a registered reinsurer, the reinsurer must be licensed, registered or otherwise authorized to carry on the business of reinsurance in Canada. (Insurance Company Reinsurance Limitation Regulation B.C. Reg. 324/90).

Filing Requirements

Unless otherwise specifically noted in the filing table below, filing deadlines for annual filings for insurers and reinsurers are no later than 60 days after fiscal year end and 30 days after each fiscal quarter for interim filings.

For reciprocal exchanges, the filing deadline for the annual permit renewal is no later than March 31st.

Only BC incorporated insurers are required to file interim (quarterly) returns unless FICOM has made a specific request for an insurer or reciprocal exchange to file.

Language

Annual filings must be submitted in English.

British Columbia (cont'd)

Signature Requirements

Original signatures are not required. BC will accept scanned or electronic versions of original signatures.

Auditor's Report

Besides the auditor's reports noted in the table below, insurers incorporated in British Columbia must file the report of the auditor required under section 212 of the *Business Corporations Act*.

All federally regulated insurers and non-BC incorporated insurers are required to file a copy of the auditor's reports filed with their primary regulator in Canada. Foreign branch insurers must also file the auditor's report filed in their home jurisdiction with their corporate audited statements.

Reciprocal exchanges must file a copy of the auditor's report on the annual return with their annual permit renewal.

Actuary's Report

Insurers incorporated in British Columbia must file a report prepared by the appointed actuary in accordance with the instructions set out by OSFI in its annual memorandums to the appointed actuary.

All federally regulated insurers and non-BC incorporated insurers are required to file a copy of the expression of opinion or certificate of opinion on the valuation of the provisions and reserves filed with their primary regulator in Canada. Please note that FICOM may request at any time copies of the complete actuary report.

Reciprocal exchanges must file with their annual permit renewal a report prepared by the appointed actuary or approved actuary in accordance with the instructions set out by OSFI in its annual memorandums to the appointed actuary.

British Columbia (cont'd)

Financial Statements of Parents, Subsidiaries and Associates

Insurers incorporated in British Columbia must file with their annual return consolidated financial statements that include the financial positions of any subsidiary and the parent company when applicable. They must also file separate unconsolidated statements of the insurer, and for each subsidiary used to prepare the consolidated statements.

Earthquakes

Property & Casualty insurance companies are required to file an earthquake return by April 15th.

Discounting of Reserves

Insurers incorporated in British Columbia must report their actuarial liabilities on a discounted basis.

All federally regulated insurers and non-BC incorporated insurers must report their actuarial liabilities on the basis specified by their primary regulator.

Reciprocal exchanges must report their actuarial liabilities on a discounted basis.

Electronic Filing

All filings noted above should be filed in ASCII, PDF, or Excel format, as appropriate, by email to filings@ficombc.ca. The email subject line should include the company name and the word "filing." If you have any problem with your electronic filings, contact the Financial and Regulatory Reporting, Financial Institutions Division at filings@ficombc.ca.

For further information, please refer to FICOM's website.

British Columbia (cont'd)

Filing Requirements

Insurers incorporated in the province of British Columbia								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	Within 60 days	x		x	x			Include copy of resolution of Directors approving the return and signed affidavit.
P&C Quarterly Filing	Within 30 days	x		x	x			Include signed certification and transmittal form.
Auditor's Report to the Superintendent	Within 60 days					x		PDF format preferred.
Auditor's Report for the Minimum Capital Test (MCT)	Within 60 days					x		PDF format preferred.
Appointed Actuary's Report (AAR)	Within 60 days					x		PDF format preferred.
AAR - FCT	See comment					x		Due within 30 days of board approval; refer to FICOM's website.
AAR - External Review Report	See comment					x		Refer to FICOM's website.
Unpaid Claims and Loss Ratio exhibits	Within 60 days					x		PDF format preferred.
Own Risk and Solvency Assessment (ORSA) Key Metrics Report	See comment					x		Due within 30 days of board approval; refer to FICOM's website.
Business plan	See comment							Refer to FICOM's website.
Audited financial statements	Within 60 days					x		PDF format preferred; refer to FICOM's website.

British Columbia (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of British Columbia								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	within 60 days*	x		x	x			Include signed affidavit.
P&C Quarterly Filing	n/a							Not required
Auditor's Report to the Superintendent - Canadian	within 60 days					x		PDF format preferred.
Auditor's Report to the Superintendent - Foreign	May 31					x		PDF format preferred.
Auditor's Report for the Minimum Capital Test (MCT)	within 60 days**					x		PDF format preferred.
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	May 31					x		PDF format preferred.
Appointed Actuary's Report (AAR)	within 60 days					x		PDF format preferred. Only Opinion of the Actuary is required.
AAR - FCT	n/a							Not required
AAR - External Review Report	n/a							Not required
Unpaid Claims and Loss Ratio exhibits	n/a							Not required

British Columbia (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the province of British Columbia (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Business plan	n/a							Not required
Audited financial statements - Canadian	within 60 days					x		PDF format preferred; refer to FICOM's website.
Audited financial statements - Foreign	May 31					x		PDF format preferred, it can be based on the financial statements in the return.
Worldwide financial statements	May 31					x		Refer to FICOM's website.

* For reinsurers incorporated in Ontario, the deadline is April 15
** Not required for Insurance Companies incorporated in Quebec

Yukon

Other specific instructions enabling insurers to meet the Yukon's requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Act, R.S.Y. 2002, chapter119
Insurance Regulations, Commissioner's Order 1977/235: #2 - Classes of Insurance
An Act to Amend the Insurance Act, S.Y. 2004, chapter 13
Commissioner's Order 2005/104
Municipal Exchange Regulation, Commissioner's Order 2005/105

Language

Contact the regulator for language requirements.

Actuary's Report

Insurers are not required to file their Actuary's Report with the condition that a copy be available at any time upon request.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

Electronic Filing

All required filings should be filed in PDF, or Excel format, as appropriate, by email to insurance.plra@gov.yk.ca. The email subject line should include the company name and the word "filing."

Yukon (cont'd)

Filing Requirements

Insurers licensed to do business in Yukon								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	March 15					x		PDF format preferred.
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

Northwest Territories

Other specific instructions enabling insurers to meet the Northwest Territories' requirements may be circulated by the Superintendent to the appropriate insurers prior to year end.

Legislation

Insurance Act, R.S.N.W.T. 1988, chapter I-4
Insurance Regulations R.R.N.W.T. 1990,c.I-3
Designation of Compensation Association Order R.R.N.W.T. 1990,c-.I-2
Uninsured Automobile Coverage Regulations R.R.N.W.T. 1990,c.I-4

Language

Contact the regulator for language requirements.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

Northwest Territories (cont'd)

Filing Requirements

Insurers licensed in the Northwest Territories								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28					PDF*		ELETRONIC FILINGS ONLY
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							

Northwest Territories (cont'd)

Filing Requirements (cont'd)

Insurers licensed in the Northwest Territories (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Business plan	n/a							
Audited financial statements	February 28					PDF*		NOT REQUIRED IF OSFI RETURN FILED
Worldwide financial statements	n/a							

* All electronic filings should be emailed to alex_lambrecht@gov.nt.ca.

Nunavut

Other specific instructions enabling insurers to meet Nunavut's requirements may be circulated by the Superintendent, to the appropriate insurers, prior to year end.

Legislation

Insurance Act, R.S.N.W.T. (Nu) 1988, chapter I-4;
Insurance Regulations (Nunavut);

Language

Contact the regulator for language requirements.

Signature Requirements

The Annual Return must be verified by the president, vice-president or managing director, or other director appointed for the purpose by the board of directors, and by the secretary or manager of the insurer.

Nunavut (cont'd)

Filing Requirements

Insurers incorporated in the territory of Nunavut								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28						1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							
Audited financial statements	n/a							

Nunavut (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Nunavut								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual Filing	February 28						1	
P&C Quarterly Filing	n/a							
Auditor's Report to the Superintendent	n/a							
Auditor's Report for the Minimum Capital Test (MCT)	n/a							
Auditor's Report for the Branch Adequacy of Assets Test (BAAT)	n/a							
Appointed Actuary's Report (AAR)	n/a							
AAR - FCT	n/a							
AAR - External Review Report	n/a							
Unpaid Claims and Loss Ratio exhibits	n/a							
Business plan	n/a							

Nunavut (cont'd)

Filing Requirements (cont'd)

Federally registered insurers licensed to do business in Nunavut (cont'd)								
		PwC						
P&C returns	**Due dates**	**ASCII file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
Worldwide financial statements	n/a							
Audited financial statements	n/a							
Worldwide financial statements	n/a							

Federal

Insurance Companies Act (ICA)

Regulations that are applicable to federally regulated property and casualty companies can be accessed on Justice Canada's website.

Guidelines and Other Guidance

Guidelines that are applicable to property and casualty insurance companies are available on the OSFI website.

OSFI also issues other guidance (i.e. letters, bulletins) that is accessible its website.

Auditor Report to Shareholders/Policyholders

The Auditor Report to shareholders/policyholders, together with the annual financial statements, is to be filed with OSFI's Regulatory Information Division no later than 21 days prior to the annual meeting. If the annual meeting is held by resolution in writing, the report is to be filed no later than 30 days following the date of signing of the resolution in writing.

Auditor and Appointed Actuary Reports

Federally regulated insurers must electronically file their Auditor Reports and Appointed Actuary's Report as separate documents as defined in the *Regulatory Reporting System (RRS) User Guide*.

Financial Statements of Subsidiaries

Federally regulated insurers are required to make available a copy of the current financial statements of each subsidiary at the insurer's head office upon request.

Federal (cont'd)

Unpaid Claims and Adjustment Expenses - *(page 20.20, line 13)*

In accordance with section 667 of the *Insurance Companies Act*, insurers must not report an amount for unpaid claims and adjustment expenses that is lower than the Actuary's best estimate.

Dividends Declared to Shareholders - *(page 20.40, line 11)*

The insurer's MCT ratio (page 30.70, line 90) must be at least 150% on a post-dividends declared basis.

Net claims and Adjustment Expenses – Run-off

Transitional Instructions – (pages 60.040 to 60.043)

For foreign P&C branches, the Claims Runoff exhibits may also be prepared on a prospective basis with no restatement of prior years. Information for the current accident year will be based on insurance business in Canada as per Part XIII of the ICA. However, where there are significant changes to prior years, it would be preferable that these exhibits be restated where this can be done on a practical basis.

Letters of Credit

Letters of credit must be in the standard wording prescribed by OSFI and must conform to the *General Guidelines for Use of Letters of Credit* as specified on OSFI's website. Letters of credit from associated unregistered reinsurers must be approved by OSFI in order to be recognized.

Letters of credits may be used to reduce capital otherwise required up to a prescribed limit and are subject to a capital charge as specified in OSFI's MCT Guideline.

Federal (cont'd)

Affidavit Verifying Annual Return - *(pages 99.10, 99.11 and 99.15)*

The affidavit on page 99.10 must be signed by the president/CEO and another executive officer or director.

The affidavit on page 99.11 must be signed by the chief agent.

The affidavit on page 99.15 must be signed by the head office president / CEO (refer also to "Section VI - Detailed Instructions" for page 99.15).

Electronic Filing

For electronic filing instructions, please refer to the *Regulatory Reporting System (RRS) – Guide for OSFI RRS Users* located on the OSFI website.

Federal (cont'd)

Filing Requirements

Federally regulated insurers								
		PwC						
P&C returns	**Due dates**	**ASCII/ XML file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
P&C Annual (1A/1Q/662) Filings	Within 60 days	x			x			
P&C Quarterly (1Q/662) Filing	Within 45 days	x			x			
Auditor's Report to the Superintendent (OSFI625) - Canadian	Within 60 days					x		
Auditor's Report to the Superintendent (OSFI625) - Foreign	May 31					x		
Auditor's Report for the Minimum Capital Test (MCT) (OSFI650)	Within 60 days					x		
Auditor's Report for the Branch Adequacy of Assets Test (BAAT) (OSFI655)	May 31					x		
Appointed Actuary's Report (AAR) (OSFI605)	Within 60 days					x		
Financial Condition Testing (FCT) (OSFI610)	Various					x		Earlier of: 30 days after presentation to the Board of Directors/ Chief Agent, and one year after fiscal year end.

Federal (cont'd)

Filing Requirements

Federally regulated insurers								
		PwC						
P&C returns	**Due dates**	**ASCII/ XML file**	**Text ".txt" file**	**Transmittal form**	**Special Excel file**	**Other electronic file**	**Hard copy**	**Other comments**
AAR - External Review Report (OSFI615)	Various					x		Due - 30 days after transmission to the Audit Committee or to the Chief Agent, as required.
Unpaid Claims and Loss Ratio exhibits (OSFI661)	Within 60 days	x	x					
Business plan (OSFI640)	Within 60 days					x	1	
Annual Financial Statement to Shareholders (OSFI597)	Various					x	1	Due -15 days prior to the annual meeting date. If AGM is held by resolution in writing, due +30 days from resolution date. If electronic file is not available, one hard copy is required.
Earthquake Exposure Data Return (OSFI659)	May 31	x						XML format or manual entry via online RRS form.
ORSA Key Metric Report (OP)	Various	x			x			Due within 30 days of the Board of Director's review or the Chief Agent's signing off
Worldwide financial statements (OSFI645) - Foreign	Various					x	1	

SECTION VI

Detailed instructions are provided to assist insurers in clarifying filing requirements; they are not provided for every page or field in the P&C return.

The instructions are applicable to all insurers regardless of their jurisdiction of incorporation, unless specified otherwise in this section or in "Section V - Jurisdictional Requirements."

Reference page numbers in the left hand column of certain pages of the P&C return indicate the supporting exhibit pertaining to the particular statement item. For these items, the insurer should also refer to the instructions in this section for the page number of the supporting exhibit.

All references to "pages" refer to pages of the P&C return.

Insurers are required to include the reference numbers to applicable note disclosures in the Financial Statement (FS) Notes Reference**,** in the second column on the left-hand side of certain pages of the P&C return.

Any reference to "section" refers to a part of these instructions. Statutory reference to a section of legislation will be presented as "sec."

Please refer to Section II for instructions on how to embed objects within the special Excel file.

Page 10.10 - Contact

The contact is the person primarily responsible for the preparation of the P&C return who can answer questions from regulators.

- Head Office and Chief Agency

In addition to the address of the Head Office and Chief Agency in Canada, the mailing address, telephone number and fax number of the Chief Agency in Canada are required.

Page 10.10 - Officers

The full name of the officer and the postal address of his/her residence (not business) must be sufficiently complete to serve as a mailing address.

A complete list of all officers is not required.

- External Auditor – Partner

The name of the partner in charge of the audit is requested in addition to the name of the accounting firm.

Page 10.15 – Directors

Canadian insurers incorporated in a provincial jurisdiction must file this page on a quarterly basis. Canadian Federally regulated insurers are only required to file this page with their 4th quarter filing.

The full name of each director and the postal address of his/her residence (not business) must be sufficiently complete to serve as a mailing address.

Include the names of directors who are also officers. After Chairperson of the Board, Chairperson of the Audit Committee and Chairperson of the Conduct Review Committee, directors should be listed alphabetically.

If there is no Audit Committee or Conduct Review Committee, enter "Not applicable" on the Name line under the Committee.

Page 10.16 – Annual Corporate Information – Chief Representative in Quebec

All insurers licenced in Quebec must complete this page.

As stated in sec. 207, chapter A-32, of *An Act Respecting Insurance*, "Every legal person not constituted under an Act of Québec which does not have its head office in Québec shall, when applying for a license, appoint a chief representative in Québec.

The representative must be a person in authority who is resident in Québec."

<u>Page 10.17</u> – Annual Corporate Information – Board Committees

This page is required for all provincially incorporated insurers.

The committee name and listing of all of the committee members should be provided for each board committee mandated by law. Additional lines can be added into the form if required.

<u>Page 10.20</u> - Shareholders

– Line 40 – Change in Ownership

"Substantial" means any share transfer involving 10% or more of the voting rights or any transfer of shares that result in a change of control of the insurer.

- Lines 61 to 89 - Shareholders

When a registered shareholder who holds 10% or more of the shares of the insurer is controlled by another individual or corporation, the name of the individual or corporation that controls the shareholder must be shown in brackets after the name of the direct shareholder.

Similarly, where a substantial shareholder is identified by a nominee name or trust account number, the name of the actual controlling shareholder must be shown in brackets.

For stock insurers, the name of each director must appear in the list of shareholders. Any exceptions (directors without shares) must be explained in a footnote to the list of shareholders.

Some insurers may prefer to submit the requested information by means of a separate, confidential letter. In this case, they should contact their regulator.

Shareholders must be grouped by class of shares owned within each common or preferred share category. With the exception of directors, shareholders owning less than 5% of the shares in one class can be grouped together.

Column 04 "% of Voting Rights" must show the percentage of the total votes that each shareholder holds. This information is required to indicate the actual percentage when the number of shares does not equal the number of votes.

Page 10.30 – Corporate Organization Chart

The corporate organization chart should show the interrelationships between the insurer, its immediate and ultimate parent, and all other associated corporations (upstream and downstream) that are:

- publicly traded companies within the group;
- banks and trust companies within the group;
- other insurance companies within the group;
- insurance companies in which the insurer has a controlling interest (such as joint ventures);
- subsidiaries of the insurer; or
- insurance management companies within the group.

Page 10.40 – Other Information

This page should be filled out on a non-consolidated basis.

– Line 10 – Amendments

This question refers to articles of association and instruments of incorporation.

Page 10.41 – Other Information (cont'd)

This page should be filled out on a consolidated basis.

– Lines 03-70 – Class of Insurance

For additional information on the classes of insurance, refer to "Section III - Definitions."

<u>Page 10.41</u> – Lines 03-70 – Maximum Policy Limit and Net Retention

The maximum policy limit is the maximum amount of insurance coverage (actual policy limit, not probable or foreseeable maximum loss) that the insurer provided during the reporting period on any one risk in the particular class of insurance. This refers to all risks insured in Canada, including those that are written by the insurer in connection with global business and/or fronted.

Net retention (direct insurers) is the maximum amount of **net** insurance coverage that the insurer retained in the reporting period on any one risk or exposure in the particular class of insurance, after the application of all reinsurance applicable to the risk.

Net retention (reinsurers) The maximum amount of coverage that the reinsurer accepted in the reporting period on any one risk or exposure in the particular class of insurance, either on a given assumed treaty or on a group of treaties covering the same risk or exposure for the same ceding insurer, less all retrocession applicable to the risk.

– Lines 03, 04, 05, 07, 10, 13, 17, 32, 33, 38, 68 – Total Insured Value (column 05)

This column should include the total insured values (TIVs) for all risks in force at the statement date. The amounts reported should be in thousands of dollars ($000s).

For the property class of insurance, it is a measure of total insured physical property losses, i.e. buildings and contents.

For the automobile class of insurance, it is a measure of the total insured value of all vehicles with comprehensive coverage, including any endorsement applicable, where appropriate.

For subscription policies, the reported TIV should be the pro-rated share of the total insured value of the property being insured. If participating on an excess layer, the value reported should be excess of the attachment point.

For marine business, TIV should reflect the estimated value of the cargo (and should be consistent with the value used in pricing the product). The amount should be reported per trip, per ship.

– Lines 88 and 89 - Non-liability Business Reported Under Liability Class of Insurance

Disclose if, on page 60.10, amounts recorded under the liability class of insurance includes any property or auto classes of insurance.

Page 10.41 – Line 90 – Discount Rate

The insurer should provide an average discount rate expressed as a percentage for all lines of business. The ratio should be limited to one decimal point and is the same average discount rate calculated and used in the Appointed Actuary's Report.

– Line 91 – Duration of Bonds

The insurer should determine the duration of the bond portfolio reported on page 20.10, lines 04 and 05 and expressed in years. The ratio should be limited to one decimal point and should be the same average duration as used in the minimum capital test calculations for interest rate risk.

Page 10.42 – Encumbered Assets

For the purposes of these returns, an asset should be treated as encumbered if a security interest has been granted. A security interest may be created in many ways, including if an asset has been pledged or if it is subject to any form of arrangement to secure, collateralise or credit-enhance any on-balance sheet or off-balance sheet transaction that it cannot be freely withdrawn. Assets pledged that are subject to any restrictions on withdrawal, such as assets that require prior approval before withdrawal or replacement by other assets should be considered encumbered.

Examples of encumbered assets include: providing deposits against reinsurance obligations, mortgaging real estate or derivatives.

Assets used in securities lending activities should be recorded on lines 40 and 45 of this page.

Please refer to "Section V - Jurisdictional Requirements" before creating and reporting a security interest.

- Column 1 – Counterparty Legal Name

Identify the counterparty to an encumbered asset.

- Column 2 – Counterparty Domicile

The name of the jurisdiction in which the counterparty is incorporated, legally registered or the contract identifies as the jurisdiction of governing law.

Page 10.42 - Column 3 – Pledged/Lodged as Collateral

Record the type of collateral being provided by the insurer, e.g. cash, government securities, subordinated debt, listed equity instruments.

- Column 4 – Asset Type

Record the type of asset that the collateral is securing (e.g. reinsurance contract, derivative, mortgage.)

- Column 7 – Brief Description of the Encumbrance

Narrative describing the purpose of the security interest being created and any other information relevant for the assessment of the asset encumbrance.

– Line 20 – Significant Dependencies

If the answer to the question on line 20 is "yes," please indicate on the lines provided (21 - 25) the name(s) of the organization(s) and the nature of each dependency. Significant dependencies are not restricted to related-party transactions.

Page 10.43 – Outsourcing and Service Agreements

This page should be filled out on a consolidated basis.

Numerical values for Row 09 should be included for Columns 05 and 06. Additional details on outsourcing agreements may be included in the embedded special Excel file.

- Column 1 – Service Outsourced

Services to be reported include those provided under contract to a party outside of the reporting entity authorized under the relevant insurance legislation in Canada, as described below. For greater clarity, this includes outsourcing contracts/agreements and for branch insurers, management service agreements with home office.

List all outsourced services that are critical to the business of providing insurance, including services outsourced to an affiliated party or head office, and services provided by non-affiliate vendors. Critical services may include, but are not limited to: underwriting, claims management and valuation, investment counselling, administration and accounting services. Data and IT services are considered critical to the business of providing insurance if the insurer uses electronic platforms for claims or underwriting.

List all financially material non-critical outsourced services. Where applicable, these services may be grouped together by functional category (e.g. maintenance, landscaping, cleaning, etc). The financial materiality of the total cost should be assessed and reported if deemed material.

All services provided from affiliated parties should be disclosed.

<u>Page 10.43</u> - Column 2 – Provider Name

The full legal name of the service provider should be reported. Where services are grouped by function, the function should be clearly described. Column 07 can be used to clarify or elaborate on the function description if necessary.

- Column 3 – Provider Head Office Address

The city, subnational jurisdiction (e.g. state or province) and national jurisdiction of the head office of the service provider should be reported.

- Column 4 – Location where services provided

The address(es) of the location where the services are provided should be reported.

- Column 5 – Annual Fee/Cost of Services

The annual fee/cost of services reported should be the total annual contractual obligation, regardless of the start/end date of the contract.

<u>Page 10.60</u> – Summary of Selected Financial Data for Five Years

Canadian insurers are requested to provide data on a consolidated basis for appropriate years where consolidated results and comparatives have been filed. For prior years when non-consolidated results were filed, insurers can report non-consolidated data but should identify it as such within the year column.

Foreign insurers are requested to provide all data on a non-consolidated basis.

Insurers are required to report using IFRS data for years where such data has been filed, including comparatives, and CGAAP data for preceding years. There is no requirement to restate the preceding years.

- Line 01 – Assets/Assets Vested in Trust

Foreign branches should report assets vested in trust on this line.

<u>Page 10.60</u> – Line 04 – Adjusted Equity

This line applies to Canadian insurers only.

"Adjusted equity" is defined as:

Equity (page 20.20, line 49)	Minus	Non-controlling interests (page 20.20, line 48)	Minus	Capital required for catastrophes (page 30.61, line 24)	Minus	Capital required for reinsurance ceded to unregistered insurers (page 30.61, line 26)

– Line 08 – Gross Claims Incurred

The figures must include claims incurred with respect to direct written and reinsurance assumed business.

– Line 31 – Claims Ratio by Year of Accident

This ratio represents incurred claims as a percentage of premiums earned. The claims data for the accident year should be extracted from the claims run-off exhibit for the current year.

Incurred claims	Equals	Amounts paid during year (page 60.41)	Minus	Investment income from UCAE and IBNR for the accident year, from the beginning of the accident year up to the end of the current year (page 60.41)	Plus	Unpaid claims for that accident year at the end of the current year (page 60.41)

Accident year net premiums earned are taken from the appropriate column of page 10.60, line 07, and are the same as the net premiums earned used for the claims ratio by calendar year.

<u>Page 10.60</u> – Line 33 – Expense Ratio

Expense ratio	Equals	Page 20.30, lines 66 + 68 + 12 + 14 + 16	Divided by	Net premiums earned

- Line 43 – Overlay approach adjustment for financial instruments (Reclassification from P&L to OCI)

Refer to the instructions for page 20.30, line 48.

– Line 46 – Investment Yield

Investment yield is to be calculated according to the following formula:

$$\text{Yield} = \frac{2(I + PI)}{(V_b + V_e - I - PI)} \times 100$$

where
I = net investment income including recognized gains (losses) on investments (page 20.30, line 39)
PI = Share of net income (loss) of pooled funds equity accounted (page 20.30, line 47)
V = cash, investment income due and accrued, and total investments (page 20.10, lines 01, 02, 45 and 19, column 01) at the beginning and end of the year

– Line 48 – Return on Equity

This line applies to Canadian insurers only.

Return on equity is to be calculated according to the formula:

$$\text{Return} = \frac{2NI}{(E_b + E_e)} \times 100$$

where
NI = net income after tax for the year (page 20.30, line 89, column 01)
E = equity at the beginning and end of the year (page 20.20, line 49, columns 01 and 03).

<u>Page 10.60</u> – Line 74 – What is the company's internal target capital ratio?

For the regulatory definition of the internal target, refer to OSFI's *Guideline A-4 - Internal Target Capital Ratio for Insurance Companies*.

- Lines 50 to 68 – Equity and Other Ratios

These lines apply to Canadian insurers only.

– Line 66 – Agents and Brokers Balances and Amounts Due from Subsidiaries and Associates

Agents and brokers balances and amounts due from subsidiaries and associate	Equals	(Receivables-unaffiliated agents and brokers (page 20.10, line 20)	Plus	Receivables-subsidiaries, associates and joint ventures (page 20.10, line 25))	Divided by	Adjusted equity (page 10.60, line 04)

– Line 68 – Claims Development as a Percentage of Adjusted Equity

Claims development as a percentage of adjusted equity	Equals	Amount excess (deficiency) (page 60.41, line 54, column 10)	Divided by	Adjusted equity (page 10.60, line 04)

- Lines 19 to 27 - Total World-Wide Business

These lines apply to foreign insurers only.

These amounts should be reported, non-consolidated, in the currency of the insurer's home jurisdiction. Please include a description of the currency.

<u>Pages 20.10 to 20.60</u> – "Consolidated" Financial Statements

For Canadian insurers, the financial statements should be reported on a consolidated basis.

For foreign insurers, the financial statements should be reported on a non-consolidated basis.

The financial statements should be completed in accordance with IFRS.

Page 20.10 – Assets

Opening prior year restated: To be completed by insurers that make a retrospective restatement or reclassification of items in accordance with International Accounting Standard (IAS) 1, paragraph 10(f).

- Columns 02, 04 and 06 – Vested in Trust

These columns apply to foreign insurers only and should exclude deposits of reinsurers held in special trust accounts.

– Line 01 – Cash and Cash Equivalents

Insurers must not offset credit balances in one depository institution against debit balances in another depository institution. Netting is allowed only between branches of the same depository institution.

– Line 04 – Investments: Short-Term Investments

Include items such as Treasury Bills, commercial paper, short-term unsecured promissory notes issued by financial institutions and industrial corporations, interest bearing deposits with a deposit-taking institution, bank deposit certificates, trust company guaranteed investment certificates, bonds and debentures. Investments that mature in one year or less are included on this line.

– Line 05 – Investments: Bonds and Debentures

Include bonds and debentures with a maturity term greater than one year on this line. Investments are split by maturity term into three categories; less than one year, greater than one year and less than or equal to five years, and greater than five years. Note that as an investment nears its maturity date it moves through the three categories.

- Line 09 – Investment Properties

Include right-of-use assets that are considered investment properties.

– Line 20 – Receivables: Unaffiliated Agents and Brokers

See instructions for page 50.20.

Page 20.10 – Line 22 – Receivables: Instalment Premiums

Policy premiums that are payable over several periods (multiple payments and instalments) should be reported on this line.

Policies that provide for premiums to be paid by instalments should be reported and accounted for in accordance with the term of the policy and not the payment mode.

- Line 23 – Receivables: Other Insurers

Receivables from Other Insurers includes receivables from insurers other than those included in line 25.

– Line 30 – Recoverable from Reinsurers: Unearned Premiums

The reinsurer's portion of unearned premiums must be reported on this line and agree with the total on page 60.10, line 89, column 03.

– Line 31 – Recoverables from Reinsurers: Unpaid Claims and Adjustment Expenses

Recoverables from reinsurers regarding unpaid claims must be reported on a discounted basis where discounting is required by the insurer's primary regulator. Please refer to "Section V - Jurisdictional Requirements" for further guidance.

The portion of recoverables (salvage and subrogation) from third parties that will be payable to reinsurers must be reported as a reduction of "recoverables from reinsurers" reported on this line. The amounts recoverable from reinsurers must also be reported by class of insurance on page 60.30 in column 07.

– Line 37 – Other Recoverables on Unpaid Claims

Refer to the instructions for page 60.30, columns 05 and 06.

The amount of any self-insured retention (SIR) recoverable must also be reported on this line. For additional information on SIRs, refer to "Section IV - Special Topics."

– Line 41 – Property and Equipment

Include right-of-use assets that are considered Property and Equipment.

Also see instructions for page 40.70, lines 79, 80 and 69.

<u>Page 20.10</u> – Line 43 – Deferred Policy Acquisition Expenses

Line 43 should exclude acquisition expenses in respect of individual non-cancellable accident and sickness policies.

– Line 45 – Investment Accounted for Using the Equity Method: Pooled Funds

Report investment pooled arrangements between affiliated companies accounted using the Equity Method.

- Column 2 – Investment Accounted for Using the Equity Method: Pooled Funds – Vested in Trust (effective Q1 2018)

Use value included in line 34 column 12 on page 40.07. The two data points should provide the same number. This will not impact the total reported assets balance on page 20.10 line 89 column 2.

Line 45, column 2 on page 20.10	**Equals**	Line 34, column 12 on page 40.07

- Line 58 – Defined Benefit Pension Plan

Report defined benefit pension plan net surpluses on this line.

– Line 88 – Other Assets

Record the aggregate amount of all other balance sheet assets not reported above.

<u>Page 20.20</u> – Liabilities, Equity, Head Office Account, Reserves & AOCI

Opening prior year restated: To be completed by insurers that make a retrospective restatement or reclassification of items in accordance with IAS 1, paragraph 10(f).

- Line 05 – Payables: Other Insurers

Payables to Other Insurers include payables to insurers other than those included in line 06.

Page 20.20 – **Line 13 – Unpaid Claims and Adjustment Expenses**

Unpaid claims and adjustment expenses must be reported at gross value, and where discounting is required by the insurer's primary regulator, on a discounted basis. Please refer to "Section V - Jurisdictional Requirements" for further guidance.

- Lines 20 and 34

These lines should only be used to report pool arrangements between affiliated companies regulated by the primary Regulator. Do not report regular reinsurance arrangements on these lines.

– Line 22– Self-Insured Retention Portion of Unpaid Claims

Report any SIR portion of unpaid claims. For additional information on SIR, refer to "Section IV - Special Topics."

- Line 23 – Defined Benefit Pension Plan

Report defined benefit pension plan net deficits on this line.

– Line 25– Subordinated Indebtedness

This line applies to Canadian insurers only.

Refer to "Section III - Definitions" for further guidance.

- Line 26 – Preferred Shares – Debt

This line applies to Canadian insurers only.

- Line 28 – Provisions and Other Liabilities

Include lease liabilities.

- Lines 41-89 – Equity

These lines apply to Canadian insurers only.

- Lines 51-79 – Head Office Account, Reserves & AOCI

These lines apply to foreign insurers only.

<u>Page 20.30</u> – Statement of Income

– Line 07 – Service Charges

Report only service charges to policyholders. Insurers that do not identify service charges separately or are not permitted to do so should continue to include these service charges with premiums on line 01.

– Line 08 – Other

Report the amount of policyholder dividends and rating refunds.

Experience rating refunds and retrospective rating credits are not to be deducted from premiums written and must be treated as a payment to policyholders in the same way as dividends to policyholders.

– **Line 62 – Gross Claims and Adjustment Expenses**

The recovery of health care costs paid by automobile insurers to provinces is to be reported as a claims and adjustment expense.

– Line 16 – General Expenses

Regulatory assessments are to be included with general expenses. Refer to instructions for page 80.20.

– Line 20 – Premium Deficiency Adjustments

Adjustments to any premium deficiency liability reported on page 20.20, line 15 must be reported on this line.

– Line 40 – Income (Loss) from Ancillary Operations

This line applies to Canadian insurers only.

There are three datapoints to be completed on this line: current (column 01), prior (column 02) and an inside datapoint (column 05). The inside datapoint is labelled "net of expenses of $'000 _____".

<u>Page 20.30</u> – Line 41 – Share of Net Income (Loss) of Subsidiaries, Associates and Joint Ventures

This line applies to Canadian insurers only.

The insurer must report it's pro rata share of the net income (loss) using the equity method of accounting for subsidiaries and associates and, where applicable, joint ventures.

– Line 42 – Gains (Losses) from Fluctuations in Foreign Exchange Rates

Gains or losses should be shown on line 42 unless gains or losses are included with the actual revenue or expense items to which they relate, for example, the payment of certain claims.

– Line 44 – Other Revenues

Revenues that should be reported on line 44 include:

- interest income earned on deposits made by the assuming insurers as security for reinsurance assumed;
- investment income from the Facility, the Facility Association, the Risk Sharing Pool or the *Plan de Répartition des Risques* (P.R.R.);
- refunds received from any reinsurer(s); and
- interest on financing activities.

– Line 46 – Other Expenses

Mutual insurance societies and reciprocal insurance exchanges should report the refunds given to their members based on the year's surplus.

– Line 47 – Share of Net Income (Loss) of Pooled Funds using EquityMethod

Report share of Net Income (Loss) from investment pooled arrangements between affiliated companies accounted using the Equity Method.

Page 20.30 - Line 48 – Overlay approach adjustment for financial instruments (Reclassification from P&L to OCI)

This line applies to recorded realized gains and losses and unrealized gains and losses for financial assets that were previously recorded using the measurement criteria under IAS 39 (*Financial Instruments: Recognition and Measurement*) and now reported temporarily using the IFRS 9 (*Financial Instruments*) **overlay approach** between Jan 1, 2018 and December 31, 2020. The overlay approach option is temporary and is to alleviate the volatility that may arise when applying IFRS 9 before the forthcoming IFRS 17 Insurance Contracts Standard which will be effective January 1, 2021.

Under the overlay approach, an insurer is permitted, but not required to reclassify from P&L to OCI an amount equal to the difference between:

a) The amount reported in P&L when IFRS 9 is applied to qualifying financial assets (that are newly measured at FVPL under IFRS 9); and
b) The amount that would have been reported in P&L if IAS 39 were applied to those assets.

In Canada the Overlay approach applies only to P&C companies.

Page 20.31 - Statement of Income (Budget) (for BC incorporated insurers only)

Only Canadian insurers that are incorporated in the province of British Columbia are required to fill in this schedule.

Report year to date budget to the end of the quarter in the same format as described on page 20.30.

See general instructions under page 20.30.

Page 20.37 - Statement of Income (Annual Budget for Next Fiscal Year) (for BC incorporated insurers only)

Only Canadian insurers/societies that are incorporated in the province of British Columbia are required to fill in this schedule.

Report annual budget numbers for next fiscal year in the same format as described on page 20.030.

See general instructions under page 20.030.

Page 20.42 – Comprehensive Income (Loss) and Accumulated Other Comprehensive Income (Loss)

General Instructions

All amounts should be reported on an after-tax basis.

- Lines 15 and 16 – Overlay Approach: Change in Unrealized Gains and Losses related to overlay approach for financial instruments

These lines applies to recorded unrealized gains and losses for financial assets that were previously recorded using the measurement criteria under IAS 39 (*Financial Instruments: Recognition and Measurement*) and now reported temporarily using the IFRS 9 (*Financial Instruments*) **overlay approach** between Jan 1, 2018 and December 31, 2020. The overlay approach option is temporary and is to alleviate the volatility that may arise when applying IFRS 9 before the forthcoming IFRS 17 Insurance Contracts Standard which will be effective January 1, 2021.

- Lines 60 and 62

These lines apply to Canadian insurers only.

Page 20.45 - Head Office Account

This table applies to foreign insurers only.

Any transitional adjustments / balances from the adoption of a new accounting standard should be reported on line 04 in the year of transition.

- Line 20 – Advances (Returns)

This line represents the equivalent of a capital transfer from (to) the head office.

- Line 21 – Expenses

This line represents the settlement of any expense agreement with the head office.

- Line 22 – Premiums/Claims

This line represents the settlement of any premium or claim transaction with the head office.

Page 20.45 - Line 23 – Other

This represents any other transfers not included above.

Page 20.45 - Reserves

- Line 96 – Nuclear Reserve

Insurers issuing nuclear risk policies are required to record an additional provision of 100% of net premiums written, less commissions, on line 96. In the absence of meaningful statistical data on the severity and frequency of losses, regulators consider it appropriate for insurers to reverse this reserve after 20 years.

- Line 98 – General and Contingency Reserves

This line applies to Canadian insurers only.

Page 20.54 - Statement of Changes in Equity

This page applies to Canadian insurers only.

Page 20.60 – Notes to Financial Statements

In addition to the notes normally required under the applicable accounting standards, these notes should include the following items, where relevant:

- the existence of financing reinsurance arrangements and their financial impact;
- the percentage of the insurer's participation in a pool, and disclosure of its share of the amount of direct premiums written, reinsurance assumed and reinsurance ceded in the pool; and
- the amount by which deferred policy acquisition expenses have been written down due to a premium deficiency. This amount should be broken down by commission expense, commission income, premium taxes and other acquisition expenses, as applicable. The note must also indicate details of the adjustment made to page 80.10, column 10, lines 09 to 79.

Page 20.70 – External Auditor Reports

The External Auditor Report for the financial statements should be addressed to the primary regulator. The External Auditor Report must cover pages 20.10 to 20.60 of the P&C return. This includes the (consolidated) Balance Sheet, Statement of Income, Comprehensive Income (Loss) and Accumulated Other Comprehensive Income (Loss), Statement of Cash Flows, Statement of Changes in Equity and Notes to the Financial Statements.

Canadian insurers are required to provide an annual External Auditor Report for the Minimum Capital Test (MCT), confirm this requirement with your primary regulator or refer to "Section V – Jurisdictional Requirements." Federally regulated branches of foreign insurers are required to provide OSFI with an annual External Auditor Report for the Branch Adequacy of Assets Test (BAAT). The annual audit of the MCT/BAAT is required to be a separate audit report from the one provided for the audited financial statements. For further details, please refer to OSFI's MCT Guideline.

For filing requirements, refer to "Section V - Jurisdictional Requirements."

Page 20.80 – Appointed Actuary's Report

The Appointed Actuary's Report must be signed by the actuary most recently appointed by the insurer's board of directors.

For filing requirements, refer to "Section V - Jurisdictional Requirements."

For additional information, refer to the primary regulator's instructions to the appointed actuary.

Pages 30.61 to 30.92 – Minimum Capital Test (MCT) and Branch Adequacy of Assets Test (BAAT)

This section must be completed in compliance with OSFI's MCT Guideline unless otherwise noted in "Section V - Jurisdictional Requirements."

Insurers incorporated in Quebec must complete this section in compliance with the AMF's guideline on capital adequacy requirements.

Page 30.61 – Minimum Capital Test/Branch Adequacy of Assets Test: Capital (Margin) Required and MCT (BAAT) Ratio

The MCT must be calculated using financial data based on the scope of consolidation defined in the MCT Guideline.

- Lines 01 and 09

These lines apply to Canadian insurers only

- Lines 11 and 19

These lines apply to foreign insurers only.

- Line 24 – Capital (Margin) Required at Target: Insurance Risk: Catastrophes

Refer to section 4.5 of the MCT Guideline for details.

- Line 52 – Capital (Margin) Required at Target: Less: Diversification Credit

The amount of diversification credit should be calculated based on the formula provided in chapter 8 of the MCT Guideline.

- Line 68 – (Specify) Blank Line

Report the transitional amount for equity derivatives, common shares held short and eligible hedges calculated in accordance with section 1.2.3 of the MCT Guideline, whether positive or negative, divided by 1.5.

Page 30.62 - Minimum Capital Test: Capital Available

This page applies to Canadian insurers only.

For further details on capital available, refer to chapter 2 of the MCT Guideline.

Page 30.62 – Line 01 – Capital Available: Qualifying category A common shares

Report the total amount of common shares issued and paid that meet the qualifying criteria for inclusion of capital instruments in category A for regulatory capital purposes as per chapter 2 of the MCT Guideline.

- Line 02 – Capital Available: Contributed Surplus

The total amount reported in this line should include contributed surplus resulting from the issuance of category A common shares.

– Line 04 – Accumulated net after-tax fair value gains (losses) in the company's own credit risk

Report the net after-tax impact of changes in fair value due to changes in the company's own credit risk for the company's financial liabilities that are classified as held for trading that were recorded on the income statement prior to the adoption of IFRS 9.

– Line 05 – Capital Available; Retained Earnings; Less: Unrealized Net After-Tax Fair Value Gains (Losses) on Own-Use Properties at Conversion to IFRS – Cost Model

At the point of conversion to IFRS, insurers may have elected to fair value their own use properties as the opening IFRS balance sheet valuation. In this case, unrealized fair value gains at conversion are reflected in equity. These unrealized gains must be deducted from capital available on an after-tax basis. The amount entered in this line at conversion is an on-going deduction to capital available and can only be changed as a result of a sale of own-use properties (owned at the time of IFRS conversion) and the resulting recognition of actual gains (losses).

Line 06 – Capital Available; Retained Earnings; Add: Accumulated Net After-Tax Revaluation Losses in Excess of Gains on Own-Use Properties – Revaluation Model

Where an insurer has chosen to use the revaluation model for own-use properties, there is a possibility that unrealized losses in fair value could exceed unrealized gains. If this occurs, the net loss will be added back to capital available to maintain the value of own-use properties at or near the value when using the cost model.

Page 30.62 – Lines 10 and 11 – Capital Available; Earthquake Reserves; Less: Earthquake EPR not Used as Part of Financial Resources to Cover Exposure

In the case where EPR is not used as part of financial resources to cover a P&C insurer's earthquake risk exposure, i.e. the company has enough financial resources to cover its earthquake risk exposure without the voluntary reserve, the EPR can be deducted from Capital available instead of being added to total capital requirements. For further details, refer to section 4.5.1 of the MCT Guideline.

– Line 16 – Capital Available; Less: Accumulated Net After-Tax Fair Value Gains (Losses) Due to Changes in the Company's Own Credit Risk

Report the net after-tax impact of changes in fair value due to changes in the company's own credit risk for the company's financial liabilities that are classified as held for trading.

– Line 17 – Capital Available; Accumulated Other Comprehensive Income (Loss); Less: Accumulated Net After-Tax Unrealized Gains on Own-Use Properties – Revaluation Surplus

Net after-tax revaluation gains on own-use properties must be deducted from accumulated other comprehensive income.

– Line 18 – Less: Shadow Accounting Impact

If the company has elected to use the shadow accounting option within IFRS, the after tax income effects must be reversed for capital available purposes.

– Lines 20 to 24 – Capital Available; Qualifying Category B and Category C Instruments

The values reported in these lines must be for instruments meeting category B and/or category C qualifying criteria, not exceeding the applicable limits as per chapter 2 of the MCT Guideline. The values reported in these lines also include share premium amounts resulting from the issuance of instruments meeting category B and/or C criteria.

Page 30.62 – Lines 30 to 46 – Capital Available

Deductions

For MCT purposes, the definition of associate relates to the notion of significant influence as defined in IFRS and includes the addition of insurance brokers that are economically dependent on the insurer.

Refer to chapter 2 of the MCT Guideline for further details relating to regulatory deductions and adjustments to capital available.

Insurers incorporated in Quebec should refer to Appendix 1 of the AMF's guideline on capital adequacy requirements.

– Lines 36 – Receivables and Recoverables from Unregistered Insurers Not Covered by Acceptable Non-Owned Deposits and LOCs

Report the total from line 29 column 42 from page 70.60.

– Lines 60 and 61 – Validation Test: 40% Limit for Category B and C Capital Instruments and 7% Limit for Category C Instruments

The values in these lines serve as a check to compare the dollar amount reported under category B and category C instruments to the allowable limits as per chapter 2 of the MCT Guideline.

– Lines 70 to 78 – Memo Items

The requested data points in these lines are for information and validation rules purposes.

Page 30.92 - Branch Adequacy of Assets Test: Net Assets Available

This page applies to foreign insurers only.

Refer to chapter 3 of the MCT Guideline for further details on net assets available for foreign branches.

- Line 61 – Receivables from agents and policyholders (including brokers)

Only amounts due from unaffiliated brokers are to be reported on line 61.

<u>Page 30.92</u> - Line 62 – Add: Revaluation Losses in Excess of Gains on Own- Use Properties

Where an insurer has chosen to use the revaluation model for own use properties, there is a possibility that unrealized losses in fair value could exceed unrealized gains. If this occurs, the net loss will be added to available assets to maintain the principal of carrying own use properties at or near the value using cost model.

- Line 63 - Less: Recoverable from Unregistered Reinsurers Not Covered by Acceptable Non-Owned Deposits and LOCs

Report recoverables from unregistered reinsurers in excess of acceptable collateral per page 70.61, line 29, column 42.

- Line 64 – Less: Unrealized Fair Value Gains (Losses) from Own Use Properties at Conversion

At the point of conversion to IFRS, insurers may have elected to fair value their own use properties as the opening IFRS balance sheet valuation. In this case, unrealized fair value gains at conversion are reflected in head office account. These unrealized gains must be deducted from available assets on an after tax basis. The amount entered on this line at conversion is an on-going deduction to available assets and can only be changed as a result of a sale of own use properties (owned at the time of IFRS conversion) and the resulting recognition of actual gains (losses).

- Line 66 – Less: Shadow Accounting Impact

If a branch has elected to use the shadow accounting option within IFRS, the after tax income effects must be reversed for available assets purposes.

- Line 70 – Amounts due from federally regulated insurers and approved reinsurers that can be legally netted against actuarial liabilities

Only amounts that meet the requirements under section 3.1.3 of the MCT Guideline are to be reported on line 70 including a prior review by OSFI of the netting agreement and legal opinions.

Page 30.64 - MCT (BAAT) Insurance Risk: Capital (Margin) Required for Unpaid Claims and Premium Liabilities

Refer to chapter 4 of the MCT Guideline for details on capital requirements for insurance risk.

Mortgage insurance companies are not required to complete this page.

The unpaid claims risk margin is calculated on the net amount of risk (i.e. net of any reinsurance, salvage and subrogation, and self-insured retentions) less PfADs multiplied by the risk factors.

The premium liabilities are to be reported after deducting reinsurance recoverables and PfADs. The premium liability risk factors are applied to the greater of the net premium liabilities net of PfADs and 30% of the net written premiums by line of business for the past 12 months.

The total reported in Column 10, line 89 is to be reported on page 30.61, line 22 and the total reported in Column 29, line 89 is to be reported on page 30.61, line 20.

Page 30.65 - MCT(BAAT) Insurance Risk: Capital (Margin) Required for Accident and Sickness Business

This page applies only to insurers writing accident and sickness business.

Refer to section 4.6 of the MCT Guideline for details on the capital requirements for accident and sickness business.

The premiums margin is calculated on the annual earned premiums multiplied by the risk factors. The unpaid claims margin is calculated by multiplying the unpaid claims relating to prior years by the risk factors. To compute the components for accidental death and dismemberment, the risk factors in section 4.6.2 of the MCT Guideline are applied to the net amount at risk.

The total reported in column 5, line 39 is to be reported on page 30.64, column 29, line 70 and the total reported in column 25, line 89 is to be reported on page 30.64, column 10, line 70.

Insurers are to report the amount of their PfADs and expected claims loss ratio for accident and sickness business by product type.

Page 30.66 - MCT(BAAT) Market Risk Capital (Margin) Required

Refer to chapter 5 of the MCT Guideline for details on capital requirements for market risk.

The following amounts should be carried forward:

Page	Line	Column		Page	Line	Column
30.66	39	04	Reported on	30.61	30	01
30.66	69	16	Reported on	30.61	32	01
30.66	79	29	Reported on	30.61	34	01
30.66	89	29	Reported on	30.61	36	01
30.66	99	29	Reported on	30.61	38	01

Page 30.71 – Capital Required for Balance Sheet Assets

This page applies to Canadian insurers only.

Refer to chapter 6 of the MCT Guideline for details on capital requirements for balance sheet assets.

The shaded lines in the "Capital Required" column denote items that are risk weighted at 0% or whose capital requirements are captured elsewhere in the return.

– Lines 06, 07 and 25 – Investments: Long-Term Obligations Including Term Deposits, Bonds, Debentures and Loans; Short-Term Obligations Including Commercial Paper; and Preferred Shares

Use page 30.73, "Capital (Margin) Required for Balance Sheet (Vested) Assets Based on External Credit Ratings," to calculate capital required for these lines.

– Lines 14, 15, 16, 17 and 23 – Loans (at amortized cost)

Loans are reported at amortized cost for the purpose of calculating capital required. The difference between the balance sheet values of loans and loans at amortized cost must be reported on line 19.

– Line 35 – Investments: Other Investments

For further details on capital treatment of other investments, refer to chapter 6 of the MCT Guideline.

Page 30.71 – Column 04 – Redistribution of exposure for collateral/guarantees

Where a Canadian company holds a guarantee or collateral backing an asset, the exposure of the asset can be reduced by the value of the collateral or guarantee. This collateral or guarantee will be reported in column 04. The net exposure in column 05 will be multiplied by the risk factors in column 1.

All amounts reported in column 04 are to be reported on page 30.73 in the appropriate category in columns 10, 12 or 14 in order to determine the capital required on the collateral or guarantee. The amounts reported as a reduction on page 30.71 are to be reported as a positive number on page 30.73.

Page 30.81 - BAAT Credit Risk: Margin Required for Balance Sheet Assets

This page applies to foreign insurers only.

Shaded lines in the margin required column denote items that are risk weighted at 0% or whose margin requirements are captured elsewhere in the return.

Refer to chapter 6 of OSFI's MCT Guideline for details on capital requirements for asset risks.

- Lines 06, 07 and 25 – Investments: Long-Term Obligations Including Term Deposits, Bonds, Debentures and Loans; Short-Term Obligations Including Commercial Paper; and Preferred Shares

Use page 30.73 Capital (Margin) Required for Balance Sheet (Vested) Assets based on External Credit Ratings to calculate margin required for these lines.

- Lines 14 and 15 – Loans (at amortized cost)

Loans are reported at amortized cost for the purpose of calculating margin required. The difference between the balance sheet values of loans and loans at amortized cost must be reported on line 19.

- Line 51 – Other (allowable) Recoverables on Unpaid Claims Including SIRs not deducted from net available assets

Include salvage & subrogation and self-insured retentions (SIRs) to the extent permitted.

Page 30.81 - Line 54 – Instalment Premiums (not yet due)

Include instalment premiums receivable (see Instructions for page 20.10, line 22) arising from the recording of premiums in advance of the services being provided.

– Column 04 – Redistribution of Exposure for Collateral/Guarantees

Where a foreign insurer holds a guarantee or collateral backing an asset, the exposure of the asset can be reduced by the value of the collateral or guarantee. This collateral or guarantee will be reported in column 04. The net exposure in column 05 will be multiplied by the risk factors in column 01.

All amounts reported in column 04 are to be reported on page 30.73 in the appropriate category in columns 10, 12 or 14 in order to determine the margin required on the collateral or guarantee. The amounts reported as a reduction on page 30.81 are to be reported as a positive number on page 30.73.

Page 30.73 – MCT (BAAT) Credit Risk: Capital (Margin) Required for Balance Sheet (Vested) Assets Based on External Credit Ratings

The ratings for long-term obligations including term deposits, bonds, debentures and loans apply to investments with an initial term greater than one year.

Refer to chapter 3 of the MCT Guideline.

– Columns 10, 12 and 14 – Redistribution of Exposure for Collateral/Guarantees

The amounts reported in columns 10, 12 and 14 will be a combination of redistributions of exposures for collateral/guarantees backing balance sheet (vested) assets as reported on page 30.73 and the redistributions from page 30.71, column 04; page 30.81, column 04 and page 30.75, columns 11, 21 and 31.

For redistributions of collateral and guarantees among the categories on page 30.73, the amounts will offset within columns 10, 12 and 14. Line 89 for columns 10, 12 and 14 should be the sum of line 89 on page 30.71 column 04; page 30.81, column 04 and page 30.75, columns 11, 12 and 31.

The total reported on line 89, column 09 should be reported on page 30.61, line 40.

Refer to section 6.2 of the MCT Guideline for further information relating to this page.

Page 30.75 – MCT (BAAT) Credit Risk: Capital (Margin) Required for Off-Balance Sheet Exposures

Refer to chapter 6 of the MCT Guideline for further information relating to this page.

- Columns 11, 21 and 31 – Redistribution of Exposure for Collateral/Guarantees

Where a P&C insurer holds a guarantee or collateral backing an off-balance sheet exposure, the exposure of the off-balance sheet instrument can be reduced by the value of the collateral or guarantee. This collateral or guarantee will be reported in columns 11, 21 or 31 depending on the remaining term to maturity.

All amounts reported in columns 11, 21 and 31 are to be reported on page 30.73 in the appropriate category in columns 10, 12 or 14 in order to determine the capital (margin) required on the collateral or guarantee. The amounts reported as a reduction on page 30.75 are to be reported as a positive number on page 30.73.

The total reported on line 89, column 39 should be reported on page 30.61, line 42.

Page 30.77 – MCT (BAAT) Credit Risk: Capital (Margin) Required for Collateral held for unregistered Reinsurance Exposures and Self-Insured Retentions

Refer to chapter 6 of the MCT Guideline for further information relating to this page.

The calculation for credit risk on self-insured retentions is to be calculated separately from the credit risk margin on collateral held for unregistered reinsurance exposures and the amounts for the capital (margin) required are added together and reported on line on page 30.61, line 44.

Page 30.79 – MCT (BAAT) Operational Risk Capital (Margin) Required

Premiums written, assumed and ceded are to be calculated on a rolling 12 month basis.

Refer to chapter 7 of the MCT Guideline for further information relating to this page.

The total reported on line 89, column 9 should be reported on line 50, page 30.61.

<u>Page 40.07</u> – Summary of Investments

For foreign insurers, investments are vested in trust. All amounts must be denominated in Canadian dollars using the appropriate exchange rate in effect at the reporting date.

This page requires investment to be reported by look through basis same as MCT requirement. Include underlying investments of pooled arrangements regardless how they are reported on the balance sheet page 20.10 (i.e. Common Shares, Other Invested Assets or using the Equity Method). These pooled arrangements include but not limited to mutual funds, segregated funds and limited investment partnerships.

– Column 01 – Fair Value Through Profit or Loss (FVTPL)

Report the balance sheet value of investments included in the category at fair value through profit or loss classified as held for trading.

– Column 03 – Fair Value Through Other Comprehensive Income (FVOCI)

Report the balance sheet value of investments classified as available for sale but measured at amortized cost.

– Column 05 – Hedges

Report the balance sheet value of derivative instruments that are part of designated cash flow or fair value (FV) hedging relationships. For a fair value hedge, also report the balance sheet value of the hedged item. For a cash flow hedge, the balance sheet value of the hedged item should be reported in column 09.

– Column 07 – FV Option/Investment Properties Fair Value

Report the balance sheet value of investments designated as at fair value through profit or loss and investment property valued using the fair value method.

– Column 09 – Amortized Cost

Report the balance sheet value of financial instrument investments measured using amortized cost including investments classified as held to maturity, loans and receivables and cash flow hedges.

Include investment properties valued using the cost method.

<u>Page 40.07</u> – Column 13 – Pooled Funds

Report pooled funds amounts included in columns 01 to 09.

– Column 15 – Realized Gains (Losses)

Record all pre-tax realized gains and losses on the sale of investments, hedge ineffectiveness, any permanent write-down of investments, including impairment losses on investments classified as available for sale, and all allowances for loan impairments.

– Column 16 – Income Excluding FV Option

Record pre-tax income from investments including interest income, dividend income, unrealized fair value gains (losses) from items classified as held for trading and fair value hedges and amortization.

– Column 19 – Unrealized Gain/Loss from FV Option

Record pre-tax unrealized gains (losses) on investments recorded in column 07, designated at fair value through profit or loss.

Aggregate Holdings (Canadian Insurers)

– Line 01 – Short-Term Investments (one year or less)

Columns 01 to 12, line 01 on page 40.07	Equals	Columns 10 to 29, line 99 on page 40.12

Holdings of bonds and debentures are to be included on lines 06, 02 or 05 depending on their maturity terms.

Sum of columns 12, line 01 and 06 on page 40.07	Equals	Columns 01, line 04 on page 20.10

<u>Page 40.07</u> – Line 06 – Bonds and Debentures (one year or less)

Columns 01 to 12, line 06 on page 40.07	Equals	Columns 10 to 29, lines 39 and 69 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in one year or less

See instructions for page 40.07, line 01.

– Line 02 – Bonds and Debentures > one year and ≤ five years

Columns 01 to 12, line 02 on page 40.07	Equals	Columns 10 to 29, lines 49 and 79 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in more than one year and less than five years

– Line 05 – Bonds and Debentures > five years

Columns 01 to 12, line 05 on page 40.07	Equals	Columns 10 to 29, lines 59 and 89 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in more in more than five years

<u>Page 40.07</u> - Lines 01, 06, 02 and 05 – Short-Term Investments, Bonds and Debentures (Foreign insurers)

Short term investments (line 01, column 02) includes items such as Treasury Bills, commercial paper, short-term unsecured promissory notes issued by financial institutions and industrial corporations, interest bearing deposits with a deposit-taking institution, bank deposit certificates, trust company guaranteed investment certificates.

Short term investments, bonds and debentures that mature, or can be repurchased by the issuing company, in one year or less must be recorded on lines 01 or 06. All others (including perpetual bonds) must be included on line 02 that mature greater than one year and less than or equal to 5 years with greater than 5 years on line 05.

Holdings of Canadian government or government guaranteed bonds are to be included on lines 06, 02 or 05 depending on their maturity terms.

Sum of columns 12, line 01 and 06 on page 40.07	Equals	Columns 02, line 04 on page 20.10

– Lines 03 and 04 – Mortgage Loans

Report only the residential and commercial mortgage loans where the total value of the loan(s) outstanding on the property is less than 80% of the loan-to-value ratio of the property at the time of writing the loan on line 03. All other mortgages must be recorded on line 04.

The balance sheet value reported for each mortgage loan is the net balance sheet value after deducting any allowance for loan impairment.

– Lines 10 and 11 – Preferred Shares

Record preferred shares that are treated as debt in accordance with the applicable accounting standard on line 10 and all other preferred shares on line 11.

– Line 20 – Investment Properties

Complete each column for all investment properties reported on page 40.70. See also instructions for page 40.70, "Investment Properties."

– Line 30 – Other Loans and Invested Assets

Complete each column for all investments reported on page 40.80. See also instructions for page 40.80.

<u>Page 40.07</u> – Line 32 – Pooled Funds – items not captured in above rows

Report other pooled funds amounts not captured by above rows 01 to 30. These amounts could include but not limited to accounts receivables, payables and derivatives of the pooled funds.

– Line 34 – Deduct: Pooled Funds accounted using the Equity Method

Include pooled funds amounts accounted using the Equity Method reported from rows 01 to 30.

– Line 39 – Total Investments

Column 12, line 39 on page 40.07	Equals	Column 01, line 19 on page 20.10

– Line 40 – Out of Canada

The following criteria should be used to determine whether an investment should be classified as "out of Canada":

- Cash/deposits held through a Canadian financial institution located outside Canada (e.g. U.S. branch) or through a foreign financial institution.
- Securities where the instruments are physically located outside Canada (e.g. with foreign depositories/custodians).
- "Book-based only" securities held/cleared through a foreign depository (e.g. the Depository Trust Company) where either
  1) the insurer/owner is a direct member of the foreign depository; or
  2) the financial institution custodian that represents the insurer, and that is a direct member of the foreign depository, is not a Canadian financial institution located in Canada.
- Mortgage loans on property physically located in Canada where documentation evidencing indebtedness is located outside Canada.
- Mortgage loans on property physically located outside Canada.
- Real estate physically located in Canada where documentation evidencing ownership is located outside Canada.
- Real estate physically located outside Canada.
- Other investments physically located in Canada where documentation evidencing ownership/indebtedness is located outside Canada.
- Other investments physically located outside Canada.

Investments not meeting these criteria should not be included.

Record the total balance sheet value of all investments included in the total investments (line 39) that are held outside of Canada in column 12.

<u>Page 40.07</u> – Line 41 – Foreign Pay Securities

Investments in Canadian and foreign bonds, debentures, shares and other investments whose principal, interest, dividends or payments are denominated in a currency other than Canadian dollars.

Record the total balance sheet value of all investments included in total investments (line 39) that are in Canadian and foreign bonds, debentures, shares and other investments whose principal, interest, dividends or payments are denominated in a currency other than Canadian dollars.

Individual Holdings

This section is to be completed for all investments excluding direct obligations of, and that portion of obligations directly, explicitly, irrevocably and unconditionally guaranteed by:

i) The Government of Canada;
ii) A Canadian province or territory; or
iii) A sovereign rated AA- or better or its central bank.

– Lines 50 and 51 – Largest and Second-Largest Exposure to an Entity or Connected Group

Record the largest (and second-largest) exposure to an entity or a connected group of entities that is not a government grade investment.

The exposure is the sum of all loans to and investments in (including debt, equity and derivative securities) that entity or connected group of entities.

An entity is connected with another entity in respect of loans if any two of the following three conditions are or would be met:

- The source of repayment of the loans would be wholly or substantially dependent on a common source of money.
- The loans would be, in substance, a single loan or would substantially serve the same purpose in the same or a related transaction.
- The loans would be dependent on the same security.

<u>Page 40.07</u> – Lines 60 and 61 – Largest and Second-Largest Exposure to a Pooled Holding

Pooled holdings are investments in a unit of a composite pool of investments. They include a company's investments in mutual funds, segregated funds, mortgage-backed securities (MBS), and other similar securitized assets.

Investments in pooled holdings must be recorded on those lines that best describe the underlying assets of the pool. For example, a $100 investment in a mutual fund that in turn invests:

- 100% in bonds—20% short term and 80% long term—will be recorded as $20 on line 01 and $80 on line 02.
- 40% of its assets in long term bonds and 60% of its assets in common shares will be recorded as $40 on line 02 and $60 on line 15.

The investment objectives of the fund may be used as a proxy for determining the composition of the investments provided that the fund has a history of investing in accordance with its investment objective.

For entities whose primary regulator is Alberta, investments in pooled holdings must be recorded as common shares.

Record the largest (and second-largest) investment in any one or group of related mutual funds or other pooled holdings that is not a government grade investment. A fund or other pooled holding is related when the management or ownership of the pooled holding is common.

Pages 40.12 to 40.52 – Consolidated Investments

These pages apply to Canadian insurers only.

Insurers must:

- populate all subtotals and totals for each of these pages; and
- provide investment details to support subtotals either by inserting additional lines or embedding a file. Please refer to Section II for instructions on how to embed objects within the special Excel file.

For each investment category, the balance sheet value of the total investments should be reported in the columns based on their classification.

Refer to the MCT Guideline for a description of the ratings.

The "Where/By whom kept" in column 01 is the name of the trustee or the servicer.

The due dates for interest are the next payment date from the date of the statement.

Page 40.12 – Investments: Short-Term Investments (excluding bonds and debentures)

Include items such as but not limited to Treasury bills, commercial paper, short-term unsecured promissory notes issued by financial institutions and industrial corporations, interest-bearing deposits with a deposit-taking institution, bank deposit certificates, trust company guaranteed investment certificates.

Short-Term Investments reported on line 99, columns 10 through 29 on page 40.12	Equals	Short-Term Investments reported on line 01, columns 01 through 12 on page 40.07

The detailed holdings for non-government, short-term investments are listed within the applicable rating categories.

Short term investments that mature in one year or less are included on this page.

<u>Page 40.22</u> – Investments: Bonds and Debentures

This represents holdings of Canadian government or government guaranteed bonds shown in total only on lines 09, 19 and 29.

Balances reported on lines 09, 19 and 29 of page 40.22 must be split by time to maturity and reported on lines 06, 02 and 05 on page 40.07.

Columns 10 to 29, lines 39 and 69 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in one year or less	Equals	Columns 01 to 12, lines 06 on page 40.07

Columns 10 to 29, lines 49 and 79 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in more than one year and less than five years	Equals	Columns 01 to 12, lines 02 on page 40.07

Columns 10 to 29, lines 59 and 89 on page 40.22	Plus	Holdings of Canadian government or government guaranteed bonds that mature in more in more than five years	Equals	Columns 01 to 12, lines 05 on page 40.07

The detailed holdings of foreign government bonds are to be listed on line 35. The country of the foreign bond should be clearly displayed within the description in column 02.

The detailed holdings for non-government bonds and debentures are listed within rating grades. Bonds and debentures that mature or can be repurchased by the issuing company in one year or less must be included in line 39 or 69. All others (including perpetual bonds) that mature in more than one year and less than five years must be included in line 49 or 79, and those that mature in more than five years in line 59 or 89.

Page 40.22 – Investments: Bonds and Debentures (cont'd)

The date of issue in column 06 should be the original issue date of the bond. It is not the date of acquisition.

Investments are split by maturity term into three categories: less than one year, greater than one year and less than or equal to five years, and greater than five years. As an investment nears its maturity date, it moves through the three categories.

Page 40.32 – Investments: Mortgage Loans

The amounts in columns 07 and 09 reflect the original amounts, not the latest values at renewal. The amount in column 08 reflects the current market value of the property.

Page 40.70 – Investment Properties

– Line 49 – Total Investment Properties

The split between investment properties and own-use properties as shown on this page reflects the balance sheet treatment under the applicable accounting standards.

Insurers should indicate in the description of the property which of the real estate items have been allocated between the two categories.

Properties should be listed in accordance with the province or country of location, with subtotals where applicable. The list should follow the alphabetical order of provinces and territories first, followed by countries other than Canada, where applicable.

Amounts shown in columns 04, 05 and 06 are gross (i.e. including encumbrances, which are shown separately on page 20.20, line 11).

- Column 07 – Balance Sheet Value - Vested in Trust

This column applies to foreign insurers only.

<u>Page 40.80</u> – Other Loans and Invested Assets

Other loans and invested assets include, where permitted, broker loans, investments in non-financial investments including, but not limited to, precious metals, coins and art as well as positive marked-to-market derivative instruments and other recognized financial investments not included in other investment categories, such as letters of credit. This balance should tie to page 40.07, line 30.

When reporting broker loans, a detailed listing is required, either directly on the form or embedded within the special Excel file.

For all recognized financial instruments listed in other investments, additional information should be attached to the insurer's Annual Return on each type and class of instrument held during the year and outstanding at year end, including the following:

- notional amount and remaining term to maturity;
- underlying assets;
- whether it is an over-the-counter or exchange traded instrument;
- whether the instrument is held for
  - (i) trading purposes;
  - (ii) hedging purposes; or
  - (iii) other purposes; and
- the maximum credit risk exposure for each type of instrument.

The notional principal amount is:

- the stated notional amount, except where the stated notional amount is leveraged or enhanced by the structure of the transaction. In these cases, insurers must use the actual or effective notional amount when determining potential future exposure;
- nil, where the credit exposure on single currency floating/floating interest rate swaps would be evaluated solely on the basis of their marked-to-market value; or
- for contracts with multiple exchanges of principal, the sum of the remaining payments.

- Column 05 – Balance Sheet Value – Vested in Trust

This column applies to foreign insurers only.

Page 50.20 – Receivable from/Payable to Non-Associated Agents and Brokers

To be completed for direct written business only.

Information respecting agents and brokers whose accounts represent 10% or more of the total year-end amounts receivable/payable, or whose annual premium volume is 10% or more of total direct written premium, must be listed separately.

The number of non-associated agents and brokers reported must be the total of all agents and brokers (other than associates) that have written at least one policy during the fiscal year.

– Other Receivables

Only amounts that represent 10% or more of the total (line 89) need to be listed separately. Amounts representing less than 10% may be aggregated.

Page 50.32 – Intra-Group Transactions

Sections I to IV apply to Canadian insurers only.

The following instructions are applicable for Sections I through IV of this page.

Where there is greater than 10% ownership in joint ventures, all amounts must be reported in detail. Associated brokers as defined in the MCT Guideline should also be reported here.

For all interests in joint ventures (with greater than 10% ownership) consolidated within the MCT, non-qualifying subsidiaries and all associates, provide the information in the relevant sections.

- Column 01 – Name of Entity

Include the name of the entity.

- Column 04 – Description of Shares

Include a description of the:

- share (preferred/common, conversion/redemption rights);
- loan or advance (secured/subordinated, conversion/redemption rights, maturity); and
- receivable (insurance/reinsurance/trade).

<u>Page 50.32</u> - Columns 06 to 14 – Interests/Loans Considered as Capital

Identify the initial cost of the shares at acquisition (column 12) and the current market value (column 14).

<u>Section III:</u>
Interests in common and preferred shares or loans/advances to joint ventures (with greater than 10% ownership), non-qualifying subsidiaries and all associates must be identified separately. The equity method will be used for valuing these interests in column 16. Column 18 reflects the difference between column 12 and column 16.

For loans and other debt instruments that are considered as capital, complete columns 14, 16 and 18 only.

- Column 08 – % Owned

Enter the percent of the total shares of the type being reported that the interest represents.

- Column 20 – Loans not Considered as Capital – Balance Sheet Value

For loans that are not considered as capital, complete columns 14, 18 and 20.

<u>Page 50.32</u> - Section V - Columns 23 to 31 – Intra-group reinsurance transactions

For Line 42 the totals from Pages 70.50, columns 18, 20+22, 24, 26 and 28 should be included in columns 23, 25, 27, 29 and 31 respectively.

For Line 44, the totals from Page 70.60/70.61, line 09, columns 18, 20+22, 24, 26, 28 and 39 should be included in columns 23, 25, 27, 29, 31 and 33, respectively.

<u>Page 50.32</u> - Section VI - Column 35 – Intra-group outsourcing

Enter the total of Line 09 from Column 05 on page 10.43 from the Annual Supplement. If there is a change of provider during the period, this change should be reflected in the total of the quarterly filing.

Page 50.32 - Section VII - Columns 40 and 42 – Intra-group transactions resulting in asset encumbrance

Enter the total of line 19 from column 05 on page 10.42 from the Annual Supplement. If there is a change of greater than 10 per cent during the period, this change should be reflected in the total of the quarterly filing.

In addition, any securities lending to related parties included in the amounts on page 10.42, lines 40 and 45 should be included in Section VII.

Page 50.40 - Receivable from/Payable to Subsidiaries, Associates & Joint Ventures

Refer to the definition of the term "associate" in "Section III – Definitions."

For Canadian insurers, amounts receivable from/payable to non-qualifying subsidiaries, all associates and joint ventures (regardless of ownership level) arising out of insurance, reinsurance and any other activities must be shown for each company.

For foreign insurers, amounts receivable from/payable to associates arising out of insurance, reinsurance and any other activities must be shown for each company.

Pages 60.10 to 60.30 – Premiums and Claims

All companies are requested to follow the "Type of Use" guidance provided in chapter 5 of the "Automobile Statistical Data Reporting Requirements" – *Automobile Statistical Plan* Manual including underwriting information tracking.

Private passenger auto includes only the code classification specified in the General Insurance Statistical Agency (GISA) manual for private passenger auto excluding farmers.

Private passenger auto does not include the Facility Association Residual Market (FARM) business. This business is to be reported separately on lines 22, 23 and 24.

Classes of Insurance

For additional information on the classes of insurance, refer to "Section III - Definitions."

Page 60.10 - Unearned Premiums

This page applies to all insurers licensed in the province of Quebec or Alberta.

– Line 80 – Out of Canada Liabilities

This line applies to Canadian insurers only.

This line must include the out-of-Canada portion of unearned premiums which is included in line 89.

Page 60.20 – Column 21 – Number of Policies in Force

Each class (or sub-class) requires the number of policies, where coverage is provided, at year-end. Number of policies in force refers to direct policies issued by the insurer.

In some circumstances, the premium for one policy is allocated to sub-classes (i.e. automobile policies), or is allocated to different lines of business (i.e. commercial policies). In those instances, the policy-in-force count should include each sub-class or additional line of business where coverage is provided. The policy-in-force count will not be additive to the total line (line 89).

Example: Company with two policies in force—one automobile policy and one commercial lines policy.

		Line	No. policies in force
One automobile policy			
Automobile	- liability	19	1
	- pers. accident	20	1
	- other	21	1
Automobile	**- total**	**29**	**1**
One commercial policy			
Property	- commercial	07	1
Boiler and machinery		32	1
Liability		59	1
TOTAL		**89**	**2**

<u>Page 60.20</u> – Column 23 – Number of Direct Claims

Number of direct claims reported during the current fiscal year	Equals	Number of direct claims incurred and reported during the current fiscal year	Plus	Number of direct claims incurred in previous years and reported during the current fiscal year

– Column 25 – Unearned Premiums from a Portfolio Transfer

This column represents the unearned premium as at the date of a portfolio transfer that occurred in the current year.

<u>Page 60.30</u> – Claims and Adjustment Expenses – Paid, Current Year and Unpaid, Current and Prior Year

The amounts shown must include both the internal and external claims adjustment expenses and a provision for IBNR.

– Line 80 – Out of Canada Liabilities

This line applies to Canadian insurers only.

This line must include the out-of-Canada portion of unpaid claims and adjustment expenses which are included in line 89.

– Columns 05 and 06

The salvage and subrogation recoverable amounts determined by the appointed actuary should be netted against gross unpaid claims and IBNR on page 20.20, line 13.

If specific contractual third-party obligations exist with respect to salvage and subrogation, the gross amount estimated to be recoverable from third parties and included on page 60.30 in columns 05 and 06 must be reported on a discounted basis.

Page 60.30 – Column 07 – Reinsurance Ceded

This column must include the portion of salvage and subrogation estimated to be recoverable from third parties that will be payable to reinsurers in accordance with their agreements (see summary and the following example).

Reporting salvage and subrogation – summary:

Item	Where reported
Gross amount of recoverables from third parties	Page 20.10, line 37 Page 60.30, column 05 or 06 Page 60.41*
Portion of recoverables due to reinsurers	Page 20.10, line 31 Page 60.30, column 07 Page 60.41*

* Or page 60.40 if the insurer is not reporting unpaid claims on a discounted basis.

– Column 07 – Reinsurance Ceded (cont'd)

Reporting salvage and subrogation - example:

Assuming an insurer has an unpaid claim of $100,000 and an estimated salvage of $20,000, the following is an example of the reporting method if the insurer has a 60-40 quota-share treaty with a reinsurer.

	Unpaid Claims and Adjustment Expenses 20.20.13.01	Recoverables on Unpaid Claims 20.10.31.01	Other Recoverables 20.10.37.01	Unpaid Claims - Direct or Assumed 60.30.89.05 or 60.30.89.06	Unpaid Claims - Ceded 60.30.89.07	Unpaid Claims - Net 60.30.89.08
Claims	100,000	40,000		100,000	40,000	60,000
Salvage		(8,000)	20,000	(20,000)	(8,000)	(12,000)
Amount Reported	**100,000**	**32,000**	**20,000**	**80,000**	**32,000**	**48,000**

<u>Page 60.30</u> – Column 09 – Net Provision at Prior Year End

Net provision at prior year end	Equals	Total unpaid claims (claims, adjustment expenses), net of reinsurance, as reported for the prior year (line 51, column 12, page 60.41 or page 60.40	Plus	Total unpaid claims (IBNR), net of reinsurance, as reported for the prior year (line 52, column 12, Page 60.41, or page 60.40

- Column 11 – Net Provisions for Portfolio Acquisition/Disposition at Transaction Date

When an acquisition / disposition of portfolio occurred during the current year, you must indicate in this column the net provisions at the date on which the acquisition / disposition took place on claims that occurred during prior years.

– Column 13 – Investment Income on Unpaid Claims of Prior Years *(to be completed by insurers reporting unpaid claims on a discounted basis)*

Amounts reported in this column are equal to the product obtained by multiplying the average for the year of net unpaid claims and adjustment expenses of prior years (the average of columns 09 and 15) times the investment yield (page 10.60, line 46[(1)]).

If the following formula applies:

(A+B+C+D-E-F) > average total investments
(page 20.10, sum of lines 01, 02 and 19)

where:

A = the average net[(2)] unpaid claims and adjustment expenses for the year
B = the average net[(2)] unearned premiums for the year
C = the average unearned commissions for the year
D = the average premium deficiency for the year
E = the average deferred policy acquisition expenses for the year, and
F = the average receivables from agents and brokers, policyholders and instalment premiums for the year.

Then the investment yield should first be multiplied by the following ratio:

$$\frac{\text{Average total investments}}{A+B+C+D-E-F}$$

(1) Insurers may select a different methodology/investment yield than this default (e.g. companies allocating specific assets to their liabilities or with a material amount of investment income from the Facility Association).
(2) Net of reinsurance and salvage and subrogation.

<u>Page 60.30</u> – Column 15 – Net Provision at Period End for Claims of Prior Years

This column must include the total unpaid claims and adjustment expenses, net of reinsurance, determined at the end of the current period, for all prior accident years.

<u>Page 60.40</u> – Net Claims and Adjustment Expenses – Run-off *(to be completed on an undiscounted basis)*

The excess or deficiency in the unpaid claims must be calculated at each prior year end.

Amounts shown on lines 50 to 59 must be taken from the insurer's claims records for the current year, and allocated by loss year. Lines 01 to 49 must be completed on the basis of the figures reported in the prior years, unless there has been a prior-period adjustment. The prior-period adjustments must be allocated to the proper loss year.

Beginning with the December 31, 2016 filing, the "Portfolio acquisition/disposition" lines will need to be completed gradually. At December 31, 2016 only line 45 will need to be completed. At December 31, 2017 both line 45 and line 35 will need to be completed and so on each year until all of lines 05,15, 25, 35 and 45 are completed for the December 2020 filing and each year thereafter.

IBNR claims must include their related adjustment expenses allocated to each of the years included in the run-off.

Excess (or deficiency) for a particular period	Equals	UCAE and IBNR at opening of the year (the first year of the period covered)	minus	Claims paid for each subsequent year	minus	UCAE and IBNR end of year (the last year of the period covered)

Excess (or deficiency) ratio	Equals	Amount of the excess or (deficiency)	Divided by	Opening unpaid claims	Plus	IBNR

<u>Page 60.41</u> – Net Claims and Adjustment Expenses – Run-off - Discounted
(to be completed by insurers reporting unpaid claims on a discounted basis)

Amounts shown on lines 50 to 53 must be taken from the insurer's claims records for the current year, and allocated by loss year. Lines 01 to 49 must be completed on the basis of the figures reported in the prior years, where applicable, unless there has been a prior-period adjustment. The prior-period adjustments must be allocated to the proper loss year.

Beginning with the December 31, 2016 filing, the "Portfolio acquisition/disposition" lines will need to be completed gradually. At December 31, 2016 only line 45 will need to be completed. At December 31, 2017 both line 45 and line 35 will need to be completed and so on each year until all of lines 05,15, 25, 35 and 45 are completed for the December 2020 filing and each year thereafter.

IBNR claims must include their related adjustment expenses allocated to each of the years included in the run-off.

Refer to page 60.40 for instructions related to excess (or deficiency) ratio.

– Lines 13, 23, 33, 43 and 53 – Investment Income from Unpaid Claims and Adjustment Expenses (including IBNR)

Report the product obtained by multiplying the average net(1) unpaid claims and adjustment expenses (including IBNR) for the year times the investment yield selected for the particular calendar year. For the current reporting year, the sum of all prior accident years' investment income allocation on exhibit 60.41, column 10, line 53 must equal the investment income allocated to prior years' claims for the year on exhibit 60.30, column 13, line 89. (Refer also to the instructions for page 60.30, column 13, where applicable.)

(1) Net of reinsurance and salvage and subrogation.

<u>Page 60.50</u> – Direct Adjustment Expenses

– Line 01 – Internal Adjustment Expenses

These are the paid expense amounts allocated to a claim file.

Pages 67.10 to 67.31 – Provincial and Territorial Exhibits

Distribution of premiums and claims by province and out of Canada is based on location of risks.

Refer to pages 60.10 to 60.30 for further guidance.

Classes of Insurance

For additional information on the classes of insurance, refer to "Section III - Definitions."

Pages 67.10 to 67.31 – Provincial and Territorial Exhibits (cont'd)

Insurers Licensed in the Province of Quebec

– Lines 04, 05 and 33 – (column 05)

Insurers licensed in the province of Quebec must not include any amount on lines 04, 05 and 33.

According to the *Regulation under the Act respecting insurance* (chapter A-32, r. 1), "property insurance" and "boiler and machinery insurance" are defined as follows:

17. Insurance in the "property insurance" class is insurance whereby the insurer undertakes to indemnify the insured against loss of or damage to property, to the extent that the insurance does not cover property that is more specifically covered by another class of insurance.

18. Insurance in the "boiler and machinery insurance" class is insurance providing one or more of the following protections:

    (1) Insurance whereby the insurer undertakes to indemnify the insured against material loss or damage sustained by the insured by reason of the explosion or rupture of a boiler or any other pressure vessel, including any mechanism, component or accessory incidental to its operation, or material loss or damage resulting from an accident in the course of its operation.

However, sub-categories disclosed on lines 04, 05 and 33 do not exist in Quebec. Insurers are required to include these protections in the class of insurance that represent the nature of the insurance contract.

<u>Page 67.10</u> – Provincial and Territorial Exhibit of Premiums Written

– Line 01 – Licensed (Y/N)

Insurers must answer "Yes" or "No" in each of columns 01-14, based on whether or not the insurer was licensed in the applicable jurisdiction as at the end of the year of the Annual Return.

– Line 99 – Dividends - Direct

Dividends must be reported on a direct-incurred basis.

<u>Page 67.31</u> – Provincial and Territorial Exhibit of Claims Incurred Including Adjustment Expenses – Undiscounted

Incurred loss data is to be entered in columns 01 through 18 by line of business, by province and territory.

<u>Page 70.10</u> – Premiums and Claims – Reinsurance Ceded

Report premiums earned and claims incurred by type of reinsurance arrangement and by line of business.

The amount of total premiums earned reported on line 89, column 06 must be equal to the total premiums ceded to reinsurers plus or minus the change in reinsurance ceded unearned premiums for the year.

<u>Page 70.21</u> - Summary of Intragroup Reinsurance

This page is designed to collect information on an assumed and ceded basis related to business that is pooled among related entities who are a party to a pooling business. Institutions are to include registered and unregistered related insurers with whom they have reinsurance pooling or participation arrangements.

Pages 70.50, 70.60 and 70.61 – Reinsurance Ceded Summary (Registered/Unregistered Reinsurance

- Column 1 – Name of Assuming Insurer

The complete legal name of the assuming insurance company to which the insurer has a counterparty exposure. Avoid using abbreviations

- Column 2,4,6,8 – Rating agency identifier code

The unique rating agency identifier used by AM Best, S&P or other rating agencies

Enter for all rating agencies that rate the assuming insurer.

If unrated enter "1" in column 8

- Column 10 – Reinsurer domicile

The domicile where the reinsurer counterparty is legally incorporated

Use the 2 letter International Standard country codes defined in ISO 3166 (International Organization for Standardization).

- Column12 - Reinsurer Group Domiciliary Jurisdiction

The domicile where the ultimate incorporated insurance group owning the reinsurer counterparty is legally incorporated. If the counterparty does not belong to a group, leave this column blank.

Use the 2 letter International Standard country codes defined in ISO 3166 (International Organization for Standardization).

- Column 14 – Business covered

Underlying class of insurance risk ceded. E.g. Property, Auto, Surety etc.

For reinsurers completing this column, Out of Canada business should be classified as Out of Canada.

<u>Pages 70.50, 70.60 and 70.61</u> - Column 16 – Type of contract

Type of reinsurance contract using the following two letter codes:

- FA – Facultative
- XS – Excess of loss
- QS – Quota share
- SU – Surplus
- SL – Stop loss

- Column 20 - Unearned Premiums ceded to assuming insurer

The reinsurer's portion of unearned premiums must be reported on this line. Represents the unexpired portion of premiums ceded and is a balance sheet item.

- Column 22 - Outstanding losses recoverable from assuming insurer

Reinsurance recoverables on unpaid losses and loss adjustment expenses equivalent to amount reported on balance sheet page 20.10, line 31, column 01.

Amount reported on page 20.10, line 31, column 01 includes the total of amounts reported on pages 70.50, 70.60 and 70.61 for registered and unregistered reinsurance ceded.

Includes claims that have been reported but not settled and claims that have been incurred but not reported including loss adjustment expenses that will be recovered from reinsurers

Column 24 - Reinsurance Receivable

Include all receivables on paid losses and paid loss adjustment expenses except for "Outstanding losses recoverable from assuming insurer" recorded in column 22.

Receivables must be reported net of allowance for doubtful accounts

<u>Pages 70.50, 70.60 and 70.61</u> - Column 26 - Reinsurance Payable

Include funds, other than those for collateral purposes (which should be recorded under column 36 Funds Held), held in the insurer's bank account; these funds must also be reported on the Balance Sheet.

Amounts payable to assuming reinsurers may be deducted from amounts receivable and recoverable in the calculations in columns 42 and 44 only where there is a legal and contractual right of offset.

Insurers are not to include any amounts payable to assuming insurers that are associates or non-qualifying subsidiaries.

- Column 30 – Aging of Reinsurance Asset

Report amount of Reinsurance Receivable (from column 24) Overdue >90 days plus the reinsurance recoverable on paid losses and loss adjustment expenses, that are not in formal dispute resolution by reason of notification, arbitration or other mechanism under the contract, and remain uncollected > 90 days. A paid loss and paid loss adjustment expense recoverable is due pursuant to original contract terms

Where the reinsurance agreement specifies or provides for determination of a date at which claims are to be paid by the reinsurer, the aging period shall commence from that date

Where the reinsurance agreement does not specify a date for payment by the reinsurer, but does specify or provide for determination of a date at which claims are to be presented to the reinsurer for payment, the aging period shall commence from that date

Reinsurance recoverable on paid losses excludes:

- IBNR loss reserves
- Unearned premiums
- Contingent commissions
- Unpaid case reserves
- Paid losses in formal dispute resolution under the reinsurance contract

Pages 70.60 and 70.61 – Reinsurance Ceded Summary: Unregistered Reinsurance

Page 70.60 should be completed by Canadian insurers only.

Page 70.61 should be completed by foreign insurers only.

- Columns 32 to 38 – Reinsurance Collateral

Only non-owned deposits that are held in a RSA are to be included in column 32. Other acceptable non-owned deposits held outside an RSA are to be reported in column 34.

Deposits of reinsurers that are not owned by an insurer shown in columns 32, 34 and 38 are not to be reported on the balance sheet.

Non-owned deposits held on behalf of an unregistered assuming insurer must be valued at market value as at the end of the reporting period, including the amount of investment income due and accrued respecting these deposits.

For federally regulated insurers:

Non-owned deposits can be reported in column 32 only where a valid and enforceable security interest has been obtained through the establishment of a reinsurance security agreement (RSA) in respect of the unregistered reinsurance.

Non-owned deposits held as security from unregistered assuming insurers are subject to a capital charge, which must be reported as capital required for Counterparty Default Risk for Unregistered Reinsurance Collateral and SIRs on page 30.61, line 44.

Refer to OSFI's *Guidance for Reinsurance Security Agreement* and the MCT Guideline for more details.

For provincially incorporated insurers where the reinsurance security agreement (RSA) regime does not apply:

Complete only in cases where a special trust account under the control of the primary regulator has been established with a Canadian trust company in respect of the unregistered reinsurance under a trust agreement prescribed by the regulator.

Pages 70.60 and 70.61 - Column 36 – Reinsurance Collateral – Funds Held

Reinsurance premiums withheld by the ceding company as specified in the reinsurance contract (for example, funds held equal to the unearned premiums and loss reserves), or advances from the reinsurer to the ceding company for the payment of losses.

- Column 38 – Reinsurance Collateral – Letters of Credit

For additional information on LOCs, refer to "Section V - Jurisdictional Requirements."

LOCs held as security from unregistered assuming insurers are subject to a margin requirement, which must be reported as Counterparty Default Risk for Off-Balance Sheet Exposures of margin required for structured settlements, letters of credit, derivatives and other exposures on page 30.61, line 44.

P&C insurers should refer to General Guidelines for Use of Letters of Credit available on OSFI's website.

– Column 42 – Recoverables in excess of Acceptable Collateral

The total number reported on line 29, column 42 is a deduction from capital available and is to be reported on page 30.62, line 36, for Canadian insurers and page 30.92, line 63 for foreign insurers.

– Column 46 – Margin Required

The total number reported on line 29, column 46 is to be reported on page 30.61, line 26.

Pages 70.62 and 70.63 – Reinsurance Ceded Summary: Unregistered Reinsurance (Transition period until December 31, 2022 for Policy Liabilities Ceded on or before December 31, 2019)

The transition period applies to policy liabilities ceded on or before December 31, 2019 and any associated new claims or development on incurred claims until December 31, 2022, the end of the transition period.

Page 70.62 should be completed by Canadian insurers only.

Page 70.63 should be completed by foreign insurers only.

See instructions for pages 70.60 and 70.61.

Page 70.90 – Reinsurance Interrogatories

– Line 01 – Changes in Reinsurance Arrangements

"Significant changes" would include items such as:

- a change in the type of reinsurance (for example, from proportional to excess of loss);
- a change in the make-up of reinsurers (for example, from registered to unregistered);
- a change in the level of protection provided by reinsurance (for example, a change in surplus lines, a change in catastrophe cover, reinsurance not placed or layers not covered);
- a change in reinstatement provisions; and
- any other change that could affect the insurer's overall financial condition.

– Line 02 – Portfolio Transfer or Commutation of Treaty

Insurers are required to provide details of each balance sheet and statement of income item and amounts involved, as of the date of the transaction. The details should be embedded into the special Excel file. The detail provided should include the type of portfolio transfer as well as the actual transfer date.

The unearned premium amounts related to the portfolio transfer or commutation of treaty must be reflected on page 60.20 by class of insurance.

– Lines 03, 04 and 05

Questions 03, 04 and 05 provide an outline of the insurer's catastrophe reinsurance program. Insurers should provide details based on the program that is in place at the filing date.

– Line 03 – Upper Limit of Catastrophe Program

Upper limit or total limit of the catastrophe program reflects the amount above which there is no reinsurance protection, e.g. catastrophe coverage of $350 million excess of $20 million would have an upper limit of $370 million.

– Line 04 – Attachment Point for Catastrophe Coverage

The attachment point is the amount that is retained before catastrophe coverage applies to the first loss.

Page 70.90 – Line 05 – Amount of Retention within the Catastrophe Coverage Layers

The retention within the catastrophe coverage refers to any portion of the program that is not 100% placed above the attachment point.

– Line 06 – Gross Estimated Catastrophe Exposure

The gross estimated catastrophe exposure, net of any non-catastrophe coverage, is considered to be the higher of a single catastrophic event within the 95th- to 99th-percentile range or the reserving probable maximum loss (PML) for earthquake as described in the *Earthquake Exposure Data Form* in accordance with OSFI's *Guideline B9* - *Earthquake Exposure Sound Practices* and AMF's *Earthquake Exposure risk management guideline*

– Line 07 – Net Retained Loss

The net retained loss considers the attachment point for the catastrophe program and any retention within the identified gross estimated catastrophe exposure as defined in line 06.

– Line 08 – Catastrophe Coverage(s) Reinstatement Cost

This question identifies the full cost of a catastrophe to the insurer. Insurers should provide details based on the program and policies in place at the time of filing.

Based on the gross estimated catastrophe exposure defined in line 06, insurers should indicate their reinstatement cost for a full year under their catastrophe reinsurance programs.

The reinstatement cost would be based on the catastrophe coverage(s) that would be impacted within the identified catastrophe exposure.

– Line 09 – Catastrophe Program Specific to Canadian Operations

A catastrophe program that is specific to the Canadian operations would provide coverage only for the Canadian insurer(s). The yes/no response should be based on the program in place at the time of filing.

<u>Page 70.90</u> - Summary of non-traditional methods of risk mitigation issued or purchased by insurer or parent for in Canada risk

All amounts should be reported in $'000 Canadian Dollars.

- Columns 03 and 05 – Insurer

This would consider all non-traditional reinsurance (ILS) contracts specific to the Canadian company or branch for in Canada risk.

- Columns 07 and 09 - Parent/Home Office

This would consider all non-traditional reinsurance (ILS) contracts specific to the parent or home office covering in Canada risk.

<u>Page 80.10</u> – Commissions

Insurers are required to calculate and report separately deferred commissions and unearned commissions for the classes of insurance listed on this page. Net commissions attributable to the year must also be reported for these classes.

Deferred commissions must include commissions paid on direct business and on reinsurance assumed.

Unearned commissions arise from commission revenue on reinsurance ceded.

All commissions, including contingent and other non-deferrable commissions, must be shown on this page. Non-deferrable commissions are those that cannot be readily identified as exclusively relating to and varying with the acquisition of premiums and therefore are not recoverable.

All commissions in respect of individual non-cancellable accident and sickness policies and any renewal commission in respect of other accident and sickness policies must be reported as other non-deferrable commissions.

Page 80.20 – Expenses – Insurance Operations

This exhibit should be completed on an incurred basis for all expenses including internal adjustment expenses.

Insurers should analyse their operations to identify all operating expenses that are allocable to the acquisition of business. Accordingly, acquisition expenses (as defined in "Section III - Definitions") that are deferred at the end of the year are to be reported in column 01; acquisition expenses that are not deferred or are attributable to the current year, including deferrals of the previous year, are to be reported in column 02.

Expenses that are not allocated to the acquisition of business (excluding adjustment and investment expenses) are to be reported in column 04.

– Column 06 – Internal Adjustment Expenses

Incurred internal adjustment expenses include the change in provisions.

The following definitions and examples of expense items refer to the expenses to be reported on page 80.20.

– Line 54 – Agency (Excluding Commission)

Includes:

- payments for agents' licences and signs;
- expense of training agents;
- cost of promotional material, souvenirs, etc., in agent's name only;
- expense of seminars, conventions and meetings for agents;
- allowances, reimbursements and payments for expenses to agents, brokers and producers other than company personnel and not computed as a percentage of premiums.

– Line 60 – Management Fees

Includes:

- services provided by outside related or non-related management corporations or agencies.

<u>Page 80.20</u> – Line 70 – Occupancy

Includes:

- furniture and equipment;
- insurance, occupancy;
- postage/courier;
- printing and stationery;
- telephone and other communication costs.

– Line 78 – Home Office Overhead

Includes:

- overhead charges levied by the head office of the parent corporation.

– Line 80 – Allowance

Includes:

- allowance for doubtful accounts.

– Line 82 – Regulatory Assessments

Includes:

- statutory assessments by regulators, including regular, special and insolvency assessments by the Property and Casualty Insurance Compensation Corporation (PACICC).

– Line 88 – Other Expenses

Includes:

- any expenses not included above.

<u>Page 90.15</u> - Out of Canada Operations

This page applies to Canadian insurers only.

<u>Pages 92.10 to 95.20</u> – Non-consolidated Financial Statements and Schedules

These pages apply to Canadian insurers only.

Insurers are required to fill out these schedules on a non-consolidated basis in accordance with applicable accounting standards and return instructions, with the exception of life insurance subsidiaries, which should be accounted for using the equity method.

The table below references the applicable instructions for the following return pages:

Schedule	Reference instructions
Page 92.10	Page 20.10
Page 92.20	Page 20.20
Page 92.30	Page 20.30
Page 92.40	Page 20.45
Page 92.42	Page 20.42
Page 93.10	Page 60.20
Page 93.20	Page 60.30
Pages 93.30 and 93.35	Page 67.10
Page 93.40	Page 67.20
Page 93.50	Page 67.30
Page 93.60	Page 60.40
Page 93.61	Page 60.41
Page 95.10	Page 70.10
Page 95.20	Page 80.20

<u>Pages 85.40, 85.45, 85.60 and 85.65</u> – Insurers Licensed in Quebec (Based on Location of Risk)

These pages apply to foreign insurers licensed in the province of Quebec only.

Pages 85.40, 85.45, 85.60 and 85.65 have been produced by the *Autorité des marchés financiers* ("AMF") further to amendments to Part XIII of the *Insurance Companies Act*, S.C. 1991, c. 47 ("ICA"), which came into force on January 1, 2010.

As a result of the amendments to the Canadian regulatory framework, foreign insurers must now report only risks insured in Canada in their P&C return. Under Part XIII of the ICA, reporting of regulatory data on a foreign entity's operations must now be based on the location of the entity's insurance business rather than the location of risks insured.

The AMF's supervision of your activities in Québec is based on the definition of "insurer" under section 1(a) of *An Act respecting insurance*, CQLR, c. A-321 (the "Act"). This definition has not been modified. Therefore, the amendments to the ICA do not affect the obligation of foreign entities to comply with provincial requirements.

Section 269 of the Act stipulates that every insurer must maintain adequate assets to guarantee the performance of its obligations in Québec. These pages are intended to ensure compliance with that requirement. They must therefore be completed by all foreign insurers licensed in Québec based on location of risk, and should thus include financial data on all risks located in Quebec, whether insured within or outside Canada. All risks located outside Quebec should therefore be excluded.

1 The Act is available on the AMF website at the following address:
http://www.lautorite.qc.ca/en/laws-insurance-deposit-institution-pro.html

<u>Page 85.40</u> - Provincial and Territorial Exhibit of Premiums Written

- Column 05 - Quebec

Include risks located in Quebec that have been insured in Canada.

- Column 18 - Out of Canada

Include risks located in Quebec that have been insured outside Canada.

- Line 99 – Dividends - Direct

Dividends must be reported on a direct incurred basis.

<u>Page 85.45</u> – Premiums Written (policies with a term of more than 12 months)

Complete page 85.45 if insurer has written, during the current year or in a prior year, policies for a term of more than 12 months. The data reported on page 85.45 must include:

- for policies for a term not exceeding 12 months: total premiums for policies written during the current year;
- for policies for a term of more than 12 months: only the portion of premiums applicable to the twelve months during the current year;

- Column 05 - Quebec

Include risks located in Quebec that have been insured in Canada.

Page 85.45 - Column 18 - Out of Canada

Include risks located in Quebec that have been insured outside Canada.

Page 85.60 - Provincial and Territorial Exhibit of claims incurred including adjustment expenses

- Column 05 - Quebec

Include risks located in Quebec that have been insured in Canada.

- Column 18 - Out of Canada

Include risks located in Quebec that have been insured outside Canada.

Page 85.65 - Risks located in Quebec – Insured outside Canada

- Columns 01, 02, 03, 04 and 05

Refer to the instructions for page 60.10.

- Columns 06, 07, 08, 09 and 10

Refer to the instructions for page 60.30.

Page 99.10 – Canadian Affidavit Verifying Annual Supplement Return

Insurers should refer to "Section V - Jurisdictional Requirements."

Each filed copy of page 99.10 must bear the original signature of everyone who is required to sign and kept within company records. Please refer to Section II for instructions on how to embed objects within the special Excel file.

Pages 99.11 and 99.15 – Foreign Affidavits Verifying Annual Supplement Return

The affidavit on page 99.11 is to be signed by the insurer's Canadian Chief Agent.

The affidavit on page 99.15 is to be signed by the President/Chief Executive Officer of the company and filed with the P&C return; if it is not possible for the affidavit to be filed with the P&C return, it must be filed within 30 days of the date that the P&C return is due.

Each filed copy of pages 99.11 and 99.15 must bear the original signature of everyone who is required to sign and kept within company records. Please refer to Section II for instructions on how to embed objects within the special Excel file.

Where an affidavit makes reference to the company's insurance business in Canada, the word "business" refers to an activity carried on in Canada and is not limited to risks located in Canada. For a discussion of which risks are considered insured in Canada, and therefore form part of the company's insurance business in Canada, please consult Advisory 2007-01-R1, *Insurance in Canada of Risks*, available on OSFI's website.

Page 99.16 - Affidavit Verifying Quarterly Return

Each filed copy of the affidavit must bear the original signature of everyone who is required to sign and kept within company records.

Actuarial Standards Board
Conseil des normes actuarielles

Standards of Practice

January 2020

Ce document est disponible en français

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1000—General

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1100 Introduction

1110 Application

.01 These Standards of Practice apply to actuarial work in Canada. Responsibility for these Standards of Practice vests in the Actuarial Standards Board (Canada) and approval of standards and changes to standards are made through a process that includes consultation with the actuarial profession and other interested parties. They are intended for the benefit of the public. The work in Canada of a member of a professional actuarial organization is expected to conform to these Standards of Practice.

.02 The existence of standards is not a substitute for professional judgment or consideration for the needs of the user(s) when performing specific work.

.03 The authority of these Standards of Practice derives from the powers of those bodies that recognize them for actuarial work in Canada. Among others, these include professional actuarial bodies and relevant laws such as those regulating pensions and insurance. Compliance with these Standards of Practice is also likely to be taken into account when the quality of actuarial work is being considered in a court of law or in other contested situations. However, in such circumstances, deviation from any provision of these Standards of Practice should not, in and of itself, be presumed to be malpractice.

1120 Definitions

.01 Each term set over dotted underlining has the meaning given in this subsection. A term that is not set over dotted underlining has its ordinary meaning.

.02 Accepted actuarial practice is the manner of performing work in accordance with these Standards of Practice. Unless the context requires otherwise, it refers to work in Canada. [*pratique actuarielle reconnue*]

.03 Actuarial cost method is a method to allocate the present value of a benefit plan's obligations to time periods, usually in the form of a service cost and an accrued liability. [*méthode d'évaluation actuarielle*]

.04 Actuarial evidence work is work where the actuary provides an expert opinion with respect to any area of actuarial practice in the context of an actual or anticipated dispute resolution proceeding, where such expert opinion is expected or required to be independent. A dispute resolution proceeding may be a court or court-related process, a tribunal, a mediation, an arbitration, or a similar proceeding. Actuarial evidence work may include the determination of capitalized values in respect of an individual, or the provision of an expert opinion with respect to a dispute involving an actuarial practice area, such as pensions or insurance, or questions of professional negligence. [*travail d'expertise devant les tribunaux*]

.05 Actuarial present value method is a method to calculate the lump sum equivalent at a specified date of amounts payable or receivable at other dates as the aggregate of the present values of each of those amounts at the specified date, and taking into account both the time value of money and, where appropriate, contingent events. [*méthode de la valeur présente actuarielle*]

.06 Actuary, as it is used in these standards, means a member of a professional actuarial organization whose work in Canada is expected to conform to these standards. [*actuaire*]

.07 Anti-selection is the tendency of one party in a relationship to exercise options to the detriment of another party when it is to the first party's advantage to do so. [*antisélection*]

.08 Appointed actuary of an entity is an actuary formally appointed, pursuant to legislation, by the entity to monitor the financial condition of that entity. [*actuaire désigné*]

.09 Appropriate engagement is one that does not impair the actuary's ability to conform to the precepts of ethical and professional conduct such as those that may be found in the Rules of Professional Conduct of the Canadian Institute of Actuaries or relevant law or regulation. Unless the context otherwise requires, wherever the word "engagement" is used in these standards it refers to an appropriate engagement. [*mandat approprié*]

.10 Automatic balancing mechanisms automatically adjust contributions, benefits, and/or parameters of a plan in order to restore the balance between its source of financing and its benefits. The mechanism is prescribed by a set of predetermined measures to be taken, either immediately or later as prescribed, upon being triggered by certain demographic, economic, or financial indicators. [*mécanismes automatiques de compensation*]

.11 Benefits liabilities are the liabilities of a plan in respect of claims incurred on or before a calculation date. [*obligations liées aux prestations*]

.12 Best estimate means without bias. [*meilleure estimation*]

.13 Calculation date is the effective date of a calculation; e.g., the calculation date in the case of a valuation for financial statements. It usually differs from the report date. [*date de calcul*]

.14 Case estimate at a calculation date is the unpaid amount of one of, or a group of, an insurer's reported claims (perhaps including the amount of claim adjustment expenses), as estimated by a claims professional according to the information available at that date. [*évaluation du dossier*]

.15 Claim adjustment expenses are internal and external expenses in connection with settlement and administration of claims. [*frais de règlement des sinistres*]

.16 Claim liabilities are the portion of insurance contract liabilities in respect of claims incurred on or before the calculation date. [*passif des sinistres*]

.17 Contingent event is an event that may or may not happen, or that may happen in more than one way or that may happen at different times. [*éventualité*]

.18 Contribution is a contribution by a participating employer or a plan member to fund a benefit plan. [*cotisation*]

.19 Contribution principle is a principle of policyholder dividend determination whereby the amount deemed to be available for distribution to policyholders by the directors of a company is divided among policies in the same proportion as policies are considered to have contributed to that amount. [*principe de contribution*]

.20 Credibility is a measure of the predictive value attached to an estimate based on a particular body of data. [*crédibilité*]

.21 Credit spread, for a fixed-income asset, is the yield to maturity on that asset minus the yield to maturity on a risk-free fixed income asset with the same cash flow characteristics. [*écart de crédit*]

.22 Definitive refers to a matter that is final and permanent rather than tentative, provisional, or unsettled. [*décision définitive*]

.23 Development of data with respect to a given coverage period is the change in the value of those data from one calculation date to a later date. [*matérialisation*]

.24 Explanatory text is text that appears outside of a box in these standards. [*texte explicatif*]

.25 External user is a user other than the actuary's client or employer. Internal user and external user are mutually exclusive. [*utilisateur externe*]

.26 External user report is a report whose users include an external user. [*rapport destiné à un utilisateur externe*]

.27 Financial condition of an entity at a date refers to its prospective ability at that date to meet its future obligations, especially obligations to policy owners, members, and those to whom it owes benefits. Financial condition is sometimes called "future financial condition". [*santé financière*]

.28 Financial position of an entity at a date is its financial state as reflected by the amount, nature, and composition of its assets, liabilities, and equity at that date. [*situation financière*]

.29 To fund a plan is to dedicate assets to its future benefits and expenses. Similarly for "funded" and "funding". [*provisionner*]

.30 Funded status is the difference between the value of assets and the actuarial present value of benefits allocated to periods up to the calculation date by the actuarial cost method, based on a valuation of a pension plan, post-employment benefit plan, or social security program. [*niveau de provisionnement*]

.31 Going concern valuation is a valuation that assumes that the entity to which the valuation applies continues indefinitely beyond the calculation date. [*évaluation en continuité*]

.32 Indexed benefit is a benefit whose amount depends on the movement of an index such as the consumer price index. [*prestation indexée*]

.33 Indicated rate is the best estimate of the premium required to provide for the corresponding expected claims costs, expenses, and provision for profit. [*taux indiqué*]

.34 Insurance contract is a contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder. Insurance contract includes group insurance, third-party contracts where the owner of the contract and the person who is compensated (the policyholder) differ, and all like arrangements substantively in the nature of insurance. [*contrat d'assurance*]

.35 Insurance contract liabilities in an insurer's statement of financial position are the liabilities at the date of the statement of financial position on account of the insurer's insurance contracts, including commitments, that are in force at that date or that were in force before that date. [*passif des contrats d'assurance*]

.36 Insurer is the party that has an obligation under an insurance contract to compensate a policyholder if an insured event occurs. Insurer includes a fraternal benefit society and the Canadian branch of a foreign insurer, but does not include a public personal injury compensation plan or a post-employment benefit plan[1]. [*assureur*]

.37 Internal user is the actuary's client or employer. Internal user and external user are mutually exclusive. [*utilisateur interne*]

.38 Internal user report is a report all of whose users are internal users. [*rapport destiné à un utilisateur interne*]

.39 Margin for adverse deviations is the difference between the assumption for a calculation and the corresponding best estimate assumption. [*marge pour écarts défavorables*]

[1] The wording of this definition is identical to the corresponding definition appearing in IFRS 4 appendix A, as of November 2009.

.40 Model is a practical representation of relationships among entities or events using statistical, financial, economic, or mathematical concepts. A model uses methods, assumptions, and data that simplify a more complex system and produces results that are intended to provide useful information on that system. A model is composed of a model specification, a model implementation, and one or more model runs. Similarly for "to model". [*modèle*]

.41 Model implementation is one or more systems developed to perform the calculations for a model specification. For this purpose "systems" include computer programs, spreadsheets, and database programs. [*implémentation du modèle*]

.42 Model risk is the risk that, due to flaws or limitations in the model or in its use, the actuary or a user of the results of the model will draw an inappropriate conclusion from those results. [*risque de modélisation*]

.43 Model run is a set of inputs and the corresponding results produced by a model implementation. [*exécution d'un modèle*]

.44 Model specification is the description of the components of a model and the interrelationship of those components with each other, including the types of data, assumptions, methods, entities, and events. [*spécifications du modèle*]

.45 New standards means new standards, or amendment or rescission of existing standards. [*nouvelles normes*]

.46 Periodic report is a report that is repeated at regular intervals. [*rapport périodique*]

.47 Plan administrator is the person or entity with overall responsibility for the operation of a benefit plan. [*administrateur d'un régime*]

.48 Policy liabilities in an insurer's statement of financial position are the liabilities at the date of the statement of financial position on account of the insurer's policies, including commitments, that are in force at that date or that were in force before that date. Policy liabilities consist of insurance contract liabilities and liabilities for policy contracts other than insurance contracts. [*passif des polices*]

.49 Policyholder is a party that has a right to compensation under an insurance contract if an insured event occurs[1]. [*titulaire de police*]

[1] The wording of this definition is identical to the corresponding definition appearing in IFRS 4 appendix A, as of November 2009.

.50 Premium liabilities are the portions of insurance contract liabilities that are not claim liabilities. [*passif des primes*]

.51 Prescribed means prescribed by these standards. [*prescrit*]

.52 Property and casualty insurance is insurance that insures individuals or legal persons

- Having an interest in tangible or intangible property, for costs arising from loss of or damage to such property (e.g., fire, fidelity, marine hull, warranty, credit, legal expense, and title insurance); or
- For damages to others or costs arising from the actions of such persons (e.g., liability and surety bonds) and for costs arising from injury to such persons (e.g., automobile accident benefits insurance). [*assurances IARD*]

.53 Provision for adverse deviations is the difference between the actual result of a calculation and the corresponding result using best estimate assumptions. [*provision pour écarts défavorables*]

.54 Public personal injury compensation plan means a public plan

- Whose primary purpose is to provide benefits and compensation for personal injuries;
- Whose mandate may include health and safety objectives and other objectives ancillary to the provision of benefits and compensation for personal injuries; and
- That has no other substantive commitments.

The benefits and compensation provided under such public plans are defined by statute. In addition, such public plans have monopoly powers, require compulsory coverage except for those groups excepted by legislation or regulation, and have the authority to set assessment rates or premiums. [*régime public d'assurance pour préjudices corporels*]

.55 Recommendation means text that appears in a box in these standards. Similarly for "recommend". [*recommandation*]

.56 Reinsurance recoverables in an insurer's statement of financial position are the assets at the calculation date on account of reinsurance treaties, including commitments, that are in force at that date or that were in force before that date. [*sommes à recouvrer auprès des réassureurs*]

.57 Related experience includes premiums, claims, exposures, expenses, and other relevant data for events analogous to the insured events under consideration other than the subject experience and may include established rate levels or rate differentials or external data. [*expérience connexe*]

.58 Report is an actuary's oral or written communication to users about his or her work. Similarly for "to report". [*rapport*]

.59 Report date is the date the actuary specifies as such in the report. It usually differs from the calculation date. [*date du rapport*]

.60 Scenario is a set of consistent assumptions. [*scénario*]

.61 Service cost is that portion of the present value of a plan's obligations that an actuarial cost method allocates to a time period, excluding any amount for that period in respect of unfunded accrued liabilities. [*cotisation d'exercice*]

.62 Social security program means a program with all the following attributes regardless of how it is financed and administered:

- Coverage is of a broad segment, or all, of the population, often on a compulsory or automatic basis;
- Benefits are provided to, or on behalf of, individuals;
- The program, including benefits and financing method, is mandated by law;
- The program is not financed through private insurance; and
- Program benefits are principally provided or delivered in the form of periodic payments upon old age, retirement, death, disability, and/or survivorship. [*programme de sécurité sociale*]

.63 Subject experience includes premiums, claims, exposures, expenses, and other data for the insurance categories under consideration. [*expérience visée*]

.64 Subsequent event is an event of which an actuary first becomes aware after a calculation date but before the corresponding report date. [*événement subséquent*]

.65 Trend is the tendency of data values to change in a general direction from one coverage period to a later coverage period. [*tendance*]

.66 User means an intended user of the actuary's work. [*utilisateur*]

.67 Virtually definitive refers to a matter that is almost certain, but that lacks one or more formalities like ratification, due diligence, regulatory approval, third reading, royal assent, or proclamation. However, a decision that still involves discretion at an executive or administrative level is not virtually definitive. [*pratiquement définitive*]

.68 Work means work that is commonly, but not necessarily exclusively, performed by actuaries in assessing, measuring, and evaluating risks and contingencies and usually includes

- Acquisition of knowledge of the circumstances affecting the work that the actuary is undertaking;
- Obtaining sufficient and reliable data;
- Selection of assumptions and methods;
- Calculations and examination of the reasonableness of their result;
- Use of other persons' work;
- Formulation of opinion and advice;
- Reporting; and
- Documentation. [*travail*]

1130 Interpretation

Recommendations

.01 These standards consist of recommendations and explanatory text.

.02 A recommendation is the highest order of guidance in these standards.

.03 Each recommendation is in boxed text where it is accompanied by its effective date, shown in square brackets.

Explanatory text

.04 The explanatory text supports and expands upon the recommendations. The explanatory text consists of definitions, explanations, examples, and useful practices.

Effective date of recommendations

.05 The notice of adoption for new standards would indicate their effective date and whether early implementation is permitted and may provide additional direction regarding the application of new standards.

.06 Subject to the notice of adoption, a recommendation applies to work with a calculation date that is on or after the recommendation's effective date. Superseded recommendations that were in effect at the calculation date would apply to work with a calculation date prior to the effective date of new standards unless early implementation is permitted and applied to the work.

General standards and practice-specific standards

.07 These standards consist of general standards and practice-specific standards. With the exception noted below, the general standards apply to all areas of actuarial practice. In addition, the standards in part 4000 apply to all areas of actuarial practice if the actuary's work in an area meets the definition of actuarial evidence work.

.08 Usually, the intent of the practice-specific standards is to narrow the range of practice considered acceptable under the general standards.

.09 In exceptional cases, however, the intent of practice-specific standards is to define as acceptable a practice that would not be acceptable under the general standards, in which case that intent is specifically noted by words in a practice-specific recommendation like: "*Notwithstanding the general standards, the actuary should…*", followed by the explanatory text.

Drafting

.10 "Should" is the strongest mandating word in these standards, appearing only in recommendations, often in the expression, "The actuary should…"

.11 "Would" is a suggestive word appearing in the explanatory text, often in the expression, "The actuary would…", and is less forceful than the mandative "should".

.12 "May" is a permissive word, appearing in both recommendations and the explanatory text, often in the expression, "The actuary may…" and often with conditions attached. It defines a safe harbour. For example, in paragraph 1510.01, the recommendation is that "The actuary may use and take responsibility for another person's work if such actions are justified." and the explanatory text describes steps that constitute justification. The actuary who is satisfied that the actions are justified has done all that may be reasonably expected and has therefore complied with accepted actuarial practice, even if the use turns out not to be well-founded.

.13 The examples are often simplified and are not all-inclusive.

1140 Judgment

.01 The actuary should exercise reasonable judgment in applying these standards. A judgment is reasonable if it is objective and takes account of

- The spirit and intent of the standards;
- Precepts of ethical and professional conduct intended to guide the conduct of the actuary;
- Common sense; and
- Constraints on time and resources. [Effective February 1, 2018]

Need for judgment

.02 While these standards are drafted so that they are, as much as possible, understandable by lay persons, the judgment of the actuary is necessary for their application.

.03 The exercise of judgment is not clear-cut, except perhaps in hindsight. A judgment that is reasonable at its making is not made unreasonable by later hindsight.

.04 A judgment that is completely subjective would not be reasonable even though it may be based on honest belief. A reasonable judgment would be objective and demonstrably take account of the criteria listed in the recommendation and discussed below.

.05 There is a reasonable range of assumptions that may be selected by an actuary for particular work and that might produce materially different results. Sometimes, it is desirable that actuaries produce results within a relatively narrow range, in which case the practice-specific standards may prescribe certain assumptions and/or methods to achieve that purpose.

Spirit and intent

.06 In applying a specific standard, it is important to be guided by the spirit and intent behind it.

Common sense

.07 A strained interpretation of a recommendation is inappropriate.

.08 An outlandish result or a seeming impossibility of applying the standards would indicate either a misinterpretation of the standards or their inapplicability to the situation.

Constraint on time and resources

.09 The actuary would normally perform work in compliance with accepted actuarial practice. However in some circumstances within the scope of an appropriate engagement, the actuary's work may be constrained by available time and resources. In such circumstances, the actuary would adopt an interpretation and application that strikes a reasonable balance between compliance and modifications due to the constraints, after consideration of accepted actuarial practice with respect to materiality and the use of approximations. The actuary would report to the user any deviation from accepted actuarial practice.

1150 Accepted actuarial practice

.01 Work in Canada should conform to accepted actuarial practice except when it conflicts with law or the terms of an appropriate engagement. A user of the actuary's work may assume that it is in accordance with accepted actuarial practice except when the actuary reports otherwise. [Effective February 1, 2018]

.02 These standards are the only explicit articulation of accepted actuarial practice for work in Canada. Explanation, examples, and other useful guidance may also be found in

- New standards, not yet effective but whose early implementation is appropriate;
- Educational notes of the Canadian Institute of Actuaries;
- Actuarial principles;
- Exposure drafts;
- Historical records;
- Canadian and international actuarial literature; and
- Practices that are generally accepted among actuaries and that are not in conflict with these standards.

The applicability and the relative importance of this other guidance for particular work is a matter for judgment.

.03 Accepted actuarial practice is sometimes called "generally accepted actuarial practice" (for example, in the Insurance Companies Act (Canada)) or "generally accepted actuarial principles".

1160 Scope

.01 These standards apply to work in Canada. [Effective February 1, 2018]

.02 The application of any recommendations beyond their scope should take account of relevant circumstances. [Effective February 1, 2018]

Work in Canada vs. work in another country

.03 The distinction between work in Canada and work in another country depends primarily on the ultimate purpose of the work. It does not depend on where the actuary lives or where the actuary happens to be when doing the work.

.04 Work in compliance with the laws or customs of a country or a particular region within that country is work in that country. Examples include

- A valuation of the liabilities of a pension plan of a Canadian subsidiary of a U.S. multinational for the consolidated financial statements of the multinational is work in the U.S.
- If the work relates to taxation under the U.S. *Internal Revenue Code*, the work is work in the U.S. Thus, a valuation of the policy liabilities of the U.S. branch of a Canadian insurer for the insurer's U.S. income tax return is work in the U.S.
- If the work relates to litigation under U.S. law before a U.S. court, the work is work in the U.S. Thus, a report to the lawyer of a Canadian defendant insured by a Canadian insurer on a claim for damages litigated under U.S. law in a U.S. court is work in the U.S.

.05 There may be cases when the distinction is not clear; for example, advice to a Canadian insurer on products to be sold outside Canada. In some of those cases, accepted actuarial practice may be the same in both countries, so the distinction does not matter. If the distinction matters, the actuary would, if practical, agree with the user and report on the appropriate practice and, failing agreement, would report the implications of the distinction.

Work outside Canada

.06 The best guidance for work in another country is the accepted practice for actuarial work in that country. This encompasses the formal guidance that the actuarial profession in that country provides for work in that country. If that guidance does not exist or is limited, these standards may provide useful guidance. The general standards are more likely to provide useful guidance than the practice-specific standards: in either case, however, the actuary would take account of differences between the laws and customs of the other country and those of Canada.

1200 Permitted Deviations

1210 Conflict with law

.01 If accepted actuarial practice conflicts with the law, the actuary should comply with the law, but should report the conflict and, if practical, useful, and appropriate under the terms of the engagement, report the result of applying accepted actuarial practice. [Effective February 1, 2018]

.02 It is practical to report the result of applying accepted actuarial practice unless the work to do so is onerous or the needed data are unobtainable. If a quantified result is not practical, a verbal description of the result is better than no report.

.03 Description of the conflict and disclosure of its effect is useful in order to

- Disclose that the work deviates from accepted actuarial practice;
- Disclose that the work, insofar as the conflict is concerned, is in accordance with the requirements of the legislator or regulator, which vary by jurisdiction, rather than accepted actuarial practice, which is uniform across Canada; and
- Promote eventual adoption of accepted actuarial practice into law.

In determining the usefulness of reporting, the actuary would take into account the needs of the various users.

.04 Accepted actuarial practice does not conflict with the law where the law mandates a practice, or limits practice to a range, that is within the range of accepted actuarial practice.

1220 Conflict with terms of engagement

.01 If accepted actuarial practice conflicts with the terms of an appropriate engagement, the actuary may comply with the terms of that engagement, but should report the conflict and, if practical, useful, and appropriate under the terms of that engagement, report the result of applying accepted actuarial practice. [Effective February 1, 2018]

.02 Usually, the actuary is responsible for all aspects of his or her work and performs it in accordance with accepted actuarial practice. The engagement to which the recommendation applies is usually one in which one or more aspects of work are omitted or are stipulated by the client or employer or the terms of a benefit plan. Examples include situations where

- The actuary uses, but does not take responsibility for, the software system, or the work, of the staff of the client or employer; and
- The client or employer or the terms of a benefits plan stipulates an assumption or a method that is not in accordance with accepted actuarial practice.

.03 Conflict between accepted actuarial practice and the law is not the same as conflict between accepted actuarial practice and the terms of an engagement. In the case of an engagement whose terms call for deviation from accepted actuarial practice, the actuary has discretion to accept or not to accept the engagement.

.04 The practicality and usefulness of reporting a result in accordance with accepted actuarial practice are the same as for subsection 1210, Conflict with law.

1230 Unusual and unforeseen situations

.01 Deviation from a particular recommendation or other guidance in these standards is accepted actuarial practice for an unusual or unforeseen situation for which the standards are inappropriate[2]. [Effective February 1, 2018]

.02 The actuary would report without reservation when deviating from a particular recommendation or other guidance in these standards in accordance with this subsection 1230, but it may sometimes be appropriate to describe and justify the deviation in the report.

1240 Materiality

.01 Deviation from a particular recommendation or explanatory text in these standards is accepted actuarial practice if the effect of so doing is not material. [Effective February 1, 2018]

[2] Actuaries are encouraged to bring such situations to the attention of the Actuarial Standards Board, who may wish to consider how standards might be improved so that they do contemplate such situations.

.02 "Material" has its ordinary meaning, but is judged from the point of view of a user, having regard for the purpose of the work. Thus, an omission, understatement, or overstatement is material if the actuary expects it to affect either the user's decision-making or the user's reasonable expectations. When the user does not specify a standard of materiality, judgment falls to the actuary. That judgment may be difficult for one or more of these reasons:

- The standard of materiality depends on how the user uses the actuary's work, which the actuary may be unable to foresee. If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of the risk of using the work for a different purpose with a more rigorous standard of materiality.
- The standard of materiality may vary among users. The actuary would choose the most rigorous standard of materiality among the users.
- The standard of materiality may vary among uses. For example, the same accounting calculations may be used for a pension plan's financial statements and the financial statements of its participating employer. The actuary would choose the more rigorous standard of materiality between those two uses.
- The standard of materiality depends on the user's reasonable expectations, consistent with the purpose of the work. For example, advice on winding-up a pension plan may affect each participant's share of its assets, so there is a conflict between equity and practicality. The same is true for advice on a policy dividend scale.

.03 The standard of materiality also depends on the work and the entity that is the subject of that work. For example,

- A given dollar standard of materiality is more rigorous for a large than for a small entity;
- The standard of materiality for valuation of an insurer's policy liabilities is usually more rigorous for those in its financial statements than for those in a forecast in financial condition testing;
- The standard of materiality for data is more rigorous for calculating an individual benefit (such as in a pension plan wind-up) than for a valuation of a group benefit plan (such as a going concern valuation of a pension plan); and
- The standard of materiality for work involving a threshold, such as a regulatory capital adequacy requirement calculation of an insurer or a statutory minimum or maximum funding level for a pension plan would become more rigorous as the entity approaches that threshold.

.04 The actuary would not report an immaterial deviation from a particular recommendation or other guidance in these standards except if doing so assists a user to decide whether the standard of materiality is appropriate for that user.

.05 The recommendation applies to both calculation and reporting standards.

Calculation standards

.06 The result of applying a recommendation may not differ materially from the result of a simpler practice requiring less time and expense. For example, the practice-specific recommendations for valuation of insurance contract liabilities for term life insurance have little effect on an insurer whose volume of term life insurance is trivial. To ignore them in that situation is accepted actuarial practice if it helps the actuary to concentrate time and resources on material items.

.07 In considering materiality, it is not appropriate to net items that are reported separately. For example, if simple practices requiring less time and expense than those in the recommendations materially overstate the premium liabilities and materially understate its claim liabilities, but do not materially affect their sum, the understatement and overstatement are each material if the two items are reported separately. In considering materiality, it is, however, appropriate to net components within a separately reported item. To continue the example, it would be appropriate to net the overstatement of premium liabilities with the understatement of claim liabilities if only the sum of the two (i.e., the insurance contract liabilities) is reported.

.08 The effect of using a simpler practice requiring less time and expense than those in the recommendations may be conservative or not conservative. Usually, the criterion of materiality is the same in both cases.

Reporting standards

.09 The result of applying a recommendation may provide information that is not useful. For example, disclosure of a material change in the basis for valuing the liabilities with respect to a material class of a benefit plan's members is not useful if that class was trivial at the previous valuation. Also, description of immaterial provisions of a benefit plan is not useful. To ignore the recommendation is accepted actuarial practice in that situation.

1300 The Engagement

1310 Accepting and continuing an engagement

.01 In accepting an engagement, the actuary should agree on its terms with the actuary's client or employer and be satisfied that it is an appropriate engagement. [Effective February 1, 2018]

.02 In performing the engagement, if the actuary becomes aware of information that, if known beforehand, would have been an impediment to acceptance of the engagement, the actuary should

- Renegotiate the engagement to remove the impediment;
- Discontinue the engagement; or
- Provided that the engagement continues to be an appropriate engagement, report the impediment and its implications. [Effective February 1, 2018]

.03 The actuary would consider consultation with the predecessor actuary, if any, to determine whether there is any reason not to accept the engagement.

Terms of the engagement

.04 The likelihood that work is satisfactory to all users concerned is enhanced by a clear understanding between the actuary and the client or employer on the terms of the engagement. Detailed identification of the time and resources involved, especially if they are substantial, and of the information needed to be communicated to and by the actuary, especially if it is sensitive or confidential, will avoid misunderstanding.

Appropriateness of engagement

.05 The following guidance is useful in judging if the engagement is an appropriate engagement:

- An engagement is prima facie appropriate if there are practice-specific standards that apply to it, especially if it does not call for a deviation from accepted actuarial practice.
- An engagement's appropriateness is not likely affected if the actuary's client or employer selects particular assumptions as part of the terms of the engagement and the report describes the assumption and identifies the source, or chooses a value for certain assumptions from within a range selected by the actuary.
- An engagement to report on alternative scenarios or "What if?" questions is appropriate, given appropriate disclosure.

- An engagement is less likely to be appropriate if it denies reasonable opportunity for an external user to question the actuary about his or her report.

.06 An engagement may involve a duty of confidentiality that conflicts with a recommendation on disclosure in reporting. That engagement would be appropriate, however, and the duty of confidentiality would supersede (at least temporarily) the duty of disclosure, if

- Confidentiality is necessary for the legitimate business objective of the client or employer;
- The extent of the information to be kept confidential is reasonable;
- The length of time for which it is to be kept confidential is reasonable; and
- The duty of confidentiality permits reasonable exceptions; for example, if the actuary is permitted to disclose the information to, and to discuss the engagement with, an auditor or a regulator.

.07 For example, the engagement may be appropriate if the actuary temporarily withholds knowledge of

- A mistake that favours his or her client in the report of the actuary engaged by the other side in litigation;
- The imminent closure of a participating employer's Canadian operations and the consequent job loss and winding-up of the plan in giving advice on its funding, but the actuary would consider the need for an early revaluation or wind-up valuation; or
- An insurer's imminent acquisition by new shareholders who will alter its business plan in reporting in the insurer's financial statements, but the actuary would consider the implications of the new business plan in reporting to the insurer's directors on financial condition.

.08 That engagement would not be appropriate, however, if the information is to be kept confidential in order to conceal improper business conduct, or to withhold information from users of the actuary's work who may reasonably expect the actuary to report it to them.

.09 Any duty of confidentiality would give way to a duty of disclosure if disclosure is mandated by law, or if disclosure is required by a professional body to whom the actuary is subject.

.10 Whether an engagement is appropriate depends on the actuary as well as on the engagement. For example, an actuary would not accept an engagement to perform work that the actuary is not qualified to do or where the actuary has an undisclosed conflict of interest.

Subsequent information

.11 While performing the engagement, the actuary may become aware of information that, if known beforehand, would have been an impediment to acceptance of the engagement. For example,

- The actuary's understanding of the engagement differs from that of the client or employer;
- The data are not sufficient or not reliable and cannot be remedied; or
- Promised resources are not forthcoming and a substitute for them is not practical.

.12 Renegotiation that removes the impediment would usually be the preferred alternative. Discontinuance would be the only alternative if the new information reveals the engagement not to be appropriate and renegotiation to make it so is impractical, which would be the case, for example, if an appointed actuary is denied access to needed information.

.13 Failing renegotiation or discontinuance, the actuary would deal with the impediment by reporting it and its implications. Description of the implications would include both qualitative and quantitative aspects and their effect on the actuary's opinion.

1320 Financial interest of the actuary

.01 The financial interest of the actuary should not influence the result of the actuary's work. [Effective February 1, 2018]

1330 Financial interest of the client or employer

.01 The financial interest of the actuary's client or employer should not influence the result of the actuary's work except to the extent that the client or employer selects assumptions or methods for the work. [Effective February 1, 2018]

.02 The actuary's client or employer may have a financial interest in the result of the actuary's work. For example, it may be in the client's or employer's interest to maximize or minimize the result. That is usually the case when the actuary's client is one side of opposing interests; for example, the plaintiff or defendant in litigation, the purchaser or vendor in a sale, and the employer or union in labour negotiations.

.03 In such a case, the actuary's duty of professionalism supersedes the duty of service to the client or employer.

.04 In giving advice to a participating employer regarding the funding of a benefit plan, the actuary may first calculate a range, at any point of which funding would be appropriate. That range is the crux of the work, so a participating employer's financial interest would not influence its calculation. It is, however, appropriate and usually desirable for the actuary to consult the participating employer in the selection of the recommended funding within the range. The participating employer's financial interest—for example, the participating employer's tolerance of fluctuation in the recommended rate of funding between one funding period and the next—would be taken into account in that consultation.

.05 Note, however, that the recommendation does not preclude the actuary's use of assumptions or methods selected by the client or employer in an appropriate engagement, but the actuary would report such use.

.06 Note also that the purpose of the work will influence the actuary's selection of assumptions and methods. The financial interest of the client or employer may shape the purpose of the work if the engagement is an appropriate engagement and the purpose is reported.

1340 General knowledge

.01 The actuary should have adequate knowledge of the conditions in the practice area in which the actuary is working. [Effective February 1, 2018]

.02 Where the actuary's work in a practice area meets the definition of actuarial evidence work, the actuary should have adequate knowledge of the conditions in both the practice area in which the actuary is working and the actuarial evidence practice area. [Effective February 1, 2018]

.03 The relevant conditions may include legislation, accounting standards and policies, taxation, the financial markets, family law, and court practices. The relevant legislation depends on the engagement, and may include legislation governing securities, pensions, insurance, workers' compensation, and employment standards.

1350 Knowledge of the circumstances affecting the work

.01 The actuary should take into account the circumstances affecting the work that the actuary is undertaking. [Effective February 1, 2018]

.02 The circumstances affecting the work include the purpose of the work, the terms of the appropriate engagement under which the work is being performed, and the application of the law to the work.

.03 The relevant knowledge for a corporate entity or benefit plan is that of the operations of the entity itself and may include that of the industry in which the entity operates. Usually, the entity is the actuary's client or employer but may be a proposed acquisition or merger partner of the client or employer.

.04 In the case of a benefit plan, the entity is the plan itself, but, depending on the engagement, knowledge of the business conditions of the participating employer(s) may also be relevant.

.05 The relevant knowledge for calculation with respect to an individual is the demographics of the individual and the context of the calculation.

.06 Additional conservatism in making a calculation is not a substitute for knowledge of the circumstances affecting the work.

1400 The Work

1410 Approximation

.01 An approximation is appropriate if it reduces the cost of, reduces the time needed for, or improves the actuary's control over, work without affecting the result. [Effective February 1, 2018]

.02 If the actuary reports an appropriate approximation, the report should avoid unintended reservation. [Effective February 1, 2018]

.03 If the appropriateness of an approximation is doubtful, the actuary should report its use with reservation. [Effective February 1, 2018]

.04 Like materiality, to which it is related, approximation pervades virtually all work and affects the application of nearly all standards. The words "approximation" and "approximate" seldom appear in these standards, but are understood throughout them.

.05 Approximation permits the actuary to strike a balance between the benefit of precision and the effort of arriving at it.

Approximation in selection of a model

.06 Reality is complex. A simple model reduces not only the time and expense of work but also the risk of calculation and data error.

.07 The appropriateness of a simplification depends on the circumstances affecting the work and the purpose of the work. For example, in selecting a model for advice on funding a pension plan, it may be appropriate to allow for indexing by modifying the assumption for a contingency of which the model takes account, such as the investment return assumption, to arrive at an appropriate composite assumption.

Approximation in the selection of assumptions

.08 Simplification of an assumption may be an appropriate approximation. For example,

- Deaths occur continuously over a year; for simplicity, assume that they all occur at the middle of the year;
- Members of a pension plan with early retirement reductions that approximate full actuarial reductions retire at various rates between, say, ages 55 and 65; for simplicity, assume that they all retire at, say, age 62; and
- If the members of a pension plan who die before retirement are entitled to a benefit that is roughly the same as the present value of the retirement benefit, for simplicity, assume that death rates before retirement are equal to zero.

.09 To make no assumption about a contingency is usually tantamount to assuming a zero rate for that contingency, which is rarely appropriate in itself, but may be appropriate when combined with an adjustment to a related assumption. For example, in some circumstances, the calculation of the liabilities in a benefit plan using an explicit wage and price inflation assumption may be approximated by calculating the liabilities without an explicit wage and price inflation assumption and using a lower liability discount rate assumption representative of the real rate of return.

Approximation by sampling

.10 A well-chosen sample avoids the extra work of an examination of the entire universe.

Approximations respecting data

.11 Data may be defective. For example, a benefit plan's records may lack the date of birth of certain members. In some cases there is an appropriate approximation, for example, sampling, or extrapolation from similar situations for which data are available.

Approximation vs. assumption

.12 A criterion of the appropriateness of an approximation is its effect on the result. If the actuary approximates but is unable to assess the resulting error, the approximation becomes, in effect, an assumption. For example, data are missing and it is not practical to get them. The actuary would consider whether their lack is so important that a report with reservation is necessary, but in any case is obliged to make an assumption about them in order to do the work.

Reporting approximations

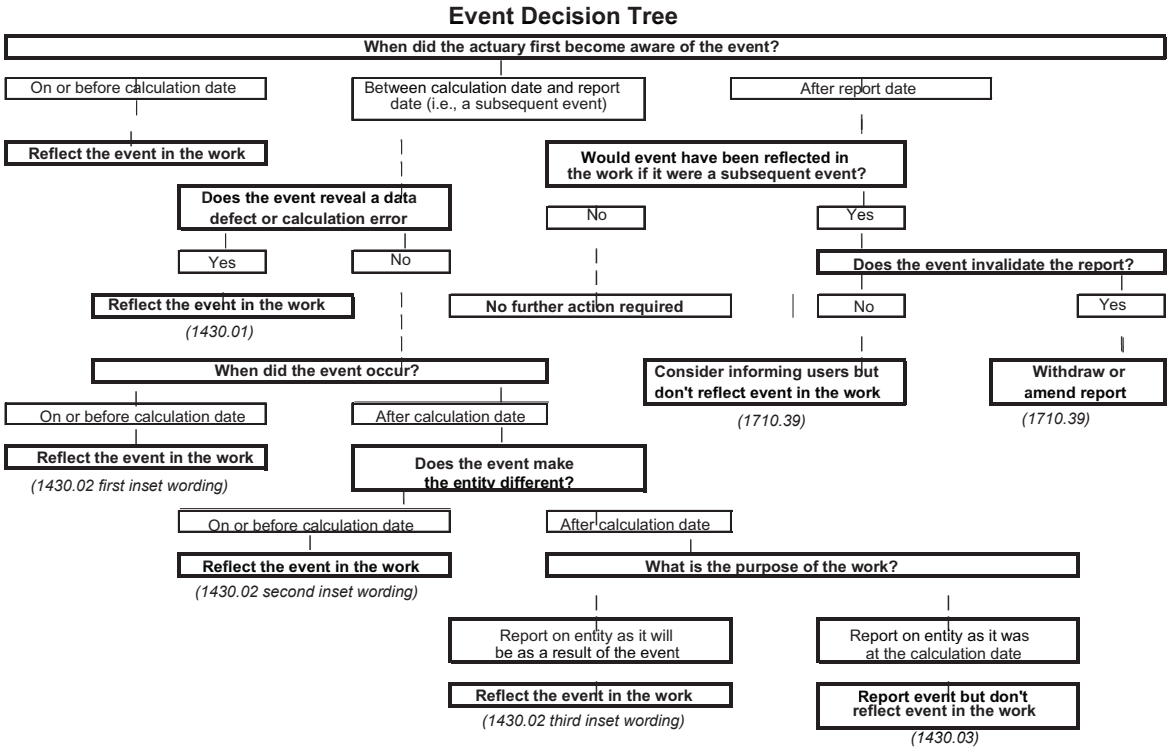
.13 To report appropriate approximations in a longer report may provide information useful to users, but such reporting would avoid unintended reservation, as the use of approximations is a usual part of work. The pervasiveness of approximations in work makes their complete reporting impractical.

.14 If the actuary reports an implicit assumption used as an approximation, he or she would also report the corresponding explicit assumption or assumptions. Similarly, if an actuary reports approximations for two offsetting assumptions that result in the same net effect as the underlying explicit assumptions, the actuary would also report the explicit assumptions.

.15 The actuary would not usually use an approximation whose appropriateness is doubtful. That may be unavoidable, however, if data are insufficient or unreliable or if needed resources are lacking. If the engagement is an appropriate engagement, the actuary would report with reservation the use of the approximation, so that a user is aware of a limitation to the actuary's work.

1420 Event

.01 The following decision tree may assist an actuary in deciding how to reflect an event in the work, if the actuary determines that the event makes the entity different.



1430 Subsequent events

.01 The actuary should correct any data defect or calculation error that is revealed by a subsequent event. [Effective February 1, 2018]

.02 For work with respect to an entity, the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event

- Provides information about the entity as it was at the calculation date;
- Retroactively makes the entity different at the calculation date; or
- Makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event. [Effective February 1, 2018]

.03 The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event. [Effective February 1, 2018]

Classification

.04 A subsequent event is relevant to the recommendation if it reveals an error, provides information about the entity, or is a decision that makes the entity different.

.05 The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those that reveal errors and, depending on the classification, the actuary would either

- Take that event into account; or
- Report that event, but not take it into account.

Entity

.06 Examples of entities are

- The pension plan, in the case of an actuary doing a valuation of a pension plan;
- The block of annuity business, in the case of an actuary calculating the insurance contract liabilities for an insurance company's annuity business;
- A combination of the pension plan and the member's specific data, in the case of the determination of a member's individual entitlement under a pension plan; and
- The insurance company, in the case of an actuary valuing the insurance contract liabilities of an insurance company.

Event provides information about entity as it was or retroactively makes entity different

.07 Examples of subsequent events that provide information about an entity as it was at the calculation date are

- Publication of an experience study that provides information for selection of assumptions;
- Reporting to an insurer of a claim that was incurred on or before the calculation date; and
- Adoption of a pension plan amendment prior to the calculation date of which the actuary becomes aware after the calculation date.

.08 Examples of events that retroactively make the entity different at the calculation date are definitive or virtually definitive decisions, made after the calculation date but effective on or before the calculation date, to

- Wind-up a pension plan, partially or fully;
- Sell a portion of a participating employer's business and consequently to spin off the corresponding members from the participating employer's pension plan;
- Amend the benefits of a pension plan;
- Transfer a portion of an insurer's policies to another insurer; or
- Invoke a judicial decision that nullifies or significantly modifies the law affecting insurance claims.

.09 If an event provides information about the entity as it was at the calculation date or provides information that retroactively makes the entity different at the calculation date, the effect of the subsequent event on the work is the same as if the actuary first became aware of the information on or before the calculation date and the actuary would not report the event as a subsequent event. That is, the actuary would report the event only to the extent that the event would have been reported had the actuary first become aware of the information before the calculation date.

Event makes entity different after

.10 If the subsequent event makes the entity different after the calculation date, the purpose of the work determines whether or not the actuary takes the event into account.

.11 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it will be as a result of the event, the actuary would take that event into account and would describe it in reporting.

.12 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it was at that date, the actuary would not take that event into account but would report the event since it would affect the entity's future operations and the actuary's subsequent calculations.

Classification not clear

.13 The classification of a subsequent event may be unclear, at least a priori, although the circumstances affecting the work and the actuary's engagement may make it clear. The following are examples of such events:

- A precipitous fall in the stock market. For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent financial reporting period.
- A salary freeze for employees who are members of a pension plan. If the salary freeze is a correction of excessive salaries, it provides additional information about the entity as it was at the calculation date, because the freeze is an indicator of the outlook for salaries at the calculation date. If the salary freeze deals with a recent problem, it indicates a change in conditions that makes the entity different after the calculation date. In either case, the actuary would consider the effect of the freeze on the employees' pension benefits. It may be that the freeze will have a lasting effect. Alternatively, it may be that the freeze will be compensated for by higher salaries later on, so that the salary inflation assumption based on historical trends continues to be valid.
- Default on a bond. If the default was the culmination of a gradual deterioration in its issuer's financial circumstances, most of which had occurred before the calculation date but that was not apparent until revealed by the default, the default provides additional information about the entity as it was at the calculation date. If the default was precipitated by a catastrophe, it provides information about a change in conditions that makes the entity different after the calculation date.
- Insolvency of an insurer's reinsurer. This is similar to default on a bond. If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but that was not apparent until revealed by the insolvency, the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, it provides information about a change in conditions that makes the entity different after the calculation date.

Reporting

.14 Sometimes, either because the actuary considers it appropriate or the terms of the work require it, the actuary may report as an alternative the opposite calculation; i.e., one that does not take the subsequent event into account when the main calculation does, or that takes the subsequent event into account when the main calculation does not. For example, in a province for which the calculation date for a pension valuation following marriage breakdown is the date of separation, a subsequent event may be the early retirement of the plan member at some time between the calculation date and the report date. The actuary would consider reporting values assuming that this subsequent event had been an established intention at the calculation date, instead of or in addition to retirement scenarios otherwise recommended in the practice-specific standards. In such cases, the actuary would make the same calculations regardless of the purpose of the work but the reporting thereof would depend on the purpose of the work.

1440 Data

.01 The actuary should apply such procedures as are necessary for the actuary to arrive at a conclusion as to the sufficiency and reliability of the data. [Effective February 1, 2018]

.02 Data relevant to the work may include experience data, membership or policyholder data, census data, claims data, asset and investment data, economic data, operational data, benefit definitions, and policy or contract terms and conditions and other data relevant to the work.

.03 Sources of data may include data obtained from inventory or sampling methods. Data may be obtained directly by the actuary or may be provided to the actuary by the client, by an accountant or auditor, by a government or statistical body, from a financial statement, or by others. Data may be specific to the client. Where data specific to the client are not available or not relevant, the actuary would consider using industry data, population data, or other published data with suitable adjustments where relevant and appropriate.

Sufficiency and reliability

.04 Data are sufficient if they include the needed information for the work. For example, participants' dates of birth are needed to value the liabilities of a pension plan.

.05 Data are reliable if they are sufficiently complete, consistent, and accurate for the purposes of the work.

.06 The actuary would test the sufficiency and reliability of (i.e., validate) the data as may be appropriate for the work but is not normally required to perform a detailed audit and is not responsible for discovering falsified or misleading data. If the terms of an appropriate engagement prevent the actuary from performing a validation of the data, the actuary would so report, and report any apparent or evident shortcomings in the data.

.07 Validation of the data may include reconciliation against financial statements and books of account or other external data, examination of internal and external consistency, comparison with prior periods, availability of independent confirmation from other sources, or detailed confirmation using sampling techniques. .

.08 If sufficient and reliable data cannot be obtained or the actuary is unable to ascertain the sufficiency or reliability of the data the actuary would, after first attempting to rectify the data, consider whether to report with reservation in respect of the data or to decline to perform the work.

.09 Data may be rectified by obtaining corrected, more complete, alternative, additional, or supplementary data; by making assumptions with respect to incomplete data; or by making adjustments to the data.

.10 If assumptions or adjustments applied to data by the actuary may cause material uncertainty or bias in the results of the work, the actuary would so report and would report any limitations on the use of the work product where appropriate.

Reliance on others

.11 The actuary usually uses data prepared by another party such as the client, an independent administrator, an auditor, a government body, or an external association. When placing reliance on such data, the actuary would consider the qualifications, competence, integrity, and objectivity of the party providing the data.

1450 Models

.01 When the work involves the use of a model, the actuary should

- choose a model appropriate to the purpose and requirements of the work; and
- understand any limitations in the model that might make the results of the model inappropriate for the intended purpose or might produce a misleading result. [Effective January 1, 2018]

.02 Like approximation, models pervade virtually all work and affect the application of most standards. The word "model" seldom appears in the standards, but is understood throughout them.

Amount of effort required

.03 The amount of effort in validation, documentation and risk mitigation would depend primarily on the influence that the model has on the decisions that it supports, and to a lesser extent on the complexity of the calculations and how they are performed. The actuary would determine how much effort is required for a particular model taking into account the use of the work and the benefit that users would be expected to obtain from enhanced diligence.

- Some models are so simple or otherwise have such low model risk that the actuary is able to exercise appropriate diligence without formal documentation or reporting. Examples of such models are
  - models that are so simple that they could be performed effectively manually; and
  - models that are used solely to validate other models that are used in the actuary's work.
- Some models are used repeatedly from the same model specification and the same model implementation but with different input data and/or assumptions. In that case, the diligence for choosing a model and for validating the model specification and model implementation is normally done only once. Documentation for each model run would normally be limited to noting the inputs and the version of the model used; and
- Some models would require extra diligence because of greater financial significance, increased complexity, or greater uncertainty about the fit of the model to the more complex system it represents.

Appropriate Model

.04 A model is appropriate and is used appropriately if

- the model enables the actuary to better understand a complex reality, at a reasonable cost, while maintaining the aspects of that reality that are important to the work;
- the model specification indicates that the intended purpose can be achieved by the model;
- the model implementation has been verified as an accurate representation of the model specification;
- each model run uses input data and assumptions consistent with the model specification; and
- each model run is interpreted as set out in the model specification.

A standard actuarial method used within a model in its proper context would be considered appropriate without further justification; for example, actuarial present value method for a pension valuation and the chain ladder method and Bornhuetter-Ferguson method for unpaid claims liabilities.

1460 Quality Assurance

.01 This subsection 1460 applies to quality assurance processes that are at the instigation of the actuary responsible for the work. Such processes include quality control in the actuary's firm or employer as well as review by persons external to the actuary's firm or employer.

.02 The actuary should implement appropriate quality assurance processes prior to the release of work to users. [Effective July 1, 2019]

.03 In deciding what quality assurance processes are appropriate and proportionate, whether different processes are suitable for different elements of the work, and when the processes would be carried out, the actuary would consider the relevant circumstances, including:

- The degree of difficulty of the various elements of the work, the extent to which professional judgment is required and the overall complexity of the work;
- The purpose of the work and the extent (if any) to which the users may reasonably be expected to challenge it;
- The significance of the work, including any financial, reputational or other consequences for the users;
- The reasonable expectations of the users;
- Whether the way in which the work is carried out makes it vulnerable to errors;
- The novelty of the work and the actuary's experience in performing similar engagements; and
- Whether there are legislative or regulatory requirements for the work to be peer reviewed.

.04 Quality assurance processes include calculation control procedures and model validation, as described in subsection 1470, calculation result examination as described in subsection 1480, self-checking of the work, repetition of the work and peer review. Appropriate quality assurance processes may differ for different elements of the work.

.05 Peer review is a process by which one or more components of an actuary's work are considered by at least one other individual for the purpose of providing assurance as to the quality of the work in question. Peer review can be an important component of the quality assurance process for an actuary's work.

.06 The actuary should select a peer reviewer with the appropriate experience and expertise to perform the peer review. If a person is qualified to have performed the work to be reviewed, then that is prima facie evidence that the person is also qualified to perform the peer review. [Effective July 1, 2019]

.07 The actuary would consider to what extent any peer review should be in the form of independent peer review, whereby one or more components of an actuary's work are considered by at least one other individual who is not otherwise involved in the work in question, who has the appropriate experience and expertise to perform the peer review, and is in a position to effectively challenge the work. The perceived objectivity of a reviewer is enhanced if the reviewer is independent of the actuary performing the work.

.08 Where one or more individuals is involved in the quality assurance processes, the actuary would clarify each person's role and responsibilities.

.09 For some types of work, particularly some engagements of actuarial evidence work, peer review may not be required due to the circumstances affecting the work. The absence of peer review of an actuary's work would not necessarily be considered as an indication of a weakness in the quality of assurance processes applied to the work. Where the actuary is expected or required to be independent in performing the work, the scope of the peer review would be defined so as not to impair such independence.

1470 Control

.01 Control procedures that detect errors and decrease the effect of errors should be performed for calculations. [Effective February 1, 2018]

.02 To mitigate model risk, the actuary should perform model validation and employ other strategies appropriate for the financial significance of the results and the complexity of the model. [Effective January 1, 2018]

.03 A calculation that is data-intensive, that is complex, that involves physically separate steps like manual and data processing steps or parallel data processing steps, or especially, a combination of them, is prone to error that appropriate control procedures may prevent or, failing prevention, detect. Appropriate control procedures also help to meet the need for consistency between the actuary's work and other related work; for example, a uniform cut-off date in the preparation of financial statements.

.04 Examples of control procedures are procedures to ensure that

- All steps in the calculation are coordinated;
- All steps in the calculation have been performed and checked;
- The actuary's data processing does not corrupt the data supplied to the actuary;
- Established procedures (for example, those for a prior period) are not changed inadvertently; and
- Changes in established procedures are made in an orderly manner.

.05 Examples of control tools are

- Random sampling;
- Spot checks; and
- Audit trails.

.06 The actuary would test that the model implementation uses the data and assumptions as intended by the model specification. The actuary would also verify that the methods used by the model implementation function as intended by the model specification. The reasonableness of the model run may be tested by using alternative models. Various components of a complex model may be compared to results obtained by separate models.

.07 The actuary would validate that the model specification is suitable for its intended purpose. For example, a stochastic model may be more suitable than a deterministic model for the valuation of minimum guarantees in some life insurance policies.

.08 Strategies to mitigate model risk are also pertinent to models developed by third parties and those for which the actuary has limited access to intermediate results, but the range of strategies may be more limited than with other models.

.09 In assessing a model's suitability, the actuary would understand the model's basic operations, important relationships, major sensitivities, limitations, strengths, and potential weaknesses.

.10 When a model is to be used for stress tests or is stochastic, the actuary would give appropriate consideration to the statistical distributions used and the magnitude and behaviour of tail events in light of the nature of the work.

1480 Reasonableness of result

.01 The actuary should examine the reasonableness of a calculation's result. [Effective February 1, 2018]

.02 As a result of defective data, defective computer software, an accumulation of individually biased assumptions, or the like, a calculation, especially a complex one like a valuation or financial forecast, may be prone to error that checking of the calculation's steps does not reveal but that an examination of its result may reveal. Such an examination is therefore useful and prudent.

.03 The examination would consider simple questions like the following.

- How does the result compare to the corresponding result for a prior period or a similar case, or to a related but independently calculated amount? Comparison of a benchmark may be more meaningful than comparison of the result. Examples of a benchmark are the forecasted number of retirees divided by the forecasted number of active employees, the loss ratio implied by claim liabilities, and the change during the year of the result.
- How does the result compare to the corresponding result of a rough approximation?
- Does the result make common sense?

.04 The answers to such questions may indicate a need for more work.

1490 Documentation

.01 The actuary should use his or her best efforts to compile and secure the retention of appropriate documentation. [Effective February 1, 2018]

.02 Documentation consists of letters of engagement, working papers, meeting notes, memoranda, correspondence, reports, copies or excerpts of company or plan data and documents, and work plans. Appropriate documentation describes the course of the work and its conformity with accepted actuarial practice.

.03 Both professional and legal needs may affect the length of time during which documentation is to be retained.

.04 The actuary's documentation for a model, if required, would typically include

- the intended purpose of the model;
- the appropriateness of the model specification for the intended purpose;
- the limitations of the model specification relevant to the model's intended purpose;
- the testing of the model implementation; and
- the presence of appropriate mitigating strategies for model risk.

.05 Model documentation would typically be sufficiently detailed to enable another actuary knowledgeable in the matters at hand to form an assessment of the judgments made and of the reasonableness of the model run.

.06 When a model is based in whole or in part on a model developed by a third party, the actuary would document how the actuary assessed the model as being appropriate for the purpose.

.07 The actuary should document the quality assurance processes that were followed in performing the work. [Effective July 1, 2019]

1500 Another Person's Work

1510 Actuary's use of another person's work

.01 The actuary may use and take responsibility for another person's work if such actions are justified. If the actuary uses but does not take responsibility for another person's work, the actuary should so report. [Effective February 1, 2018]

.02 Where the work involves the use of data provided by another person, subsection 1440 Data applies.

.03 Use of the work of other persons is a usual, indeed often inevitable, part of work. The actuary uses and takes responsibility for the work of colleagues and assistants; that use is usually straightforward because the actuary is able to assess the appropriateness of their work.

.04 If the actuary uses the work of a person other than colleagues and assistants, the actuary may or may not take responsibility for that person's work. Taking responsibility may require more work of the actuary and may expose the actuary to risk of legal liability, but may give the user greater confidence that the other person's work is appropriate.

.05 The actuary would not take such responsibility if doing so would lead a reasonable person to believe that the actuary possessed and purported to exercise the skill and learning of a duly qualified professional in that other person's profession.

.06 If the actuary does not take such responsibility, the actuary reports with reservation and the user would seek alternative assurance that the other person's work is appropriate, which may or may not be practical.

Use and take responsibility

.07 The actuary may use and take responsibility for another person's work, given confidence that such actions are justified as a result of considerations such as the following:

- Early and periodic communication with the other person;
- Confidence in the other person's qualifications, competence, integrity, and objectivity;
- The other person's awareness of how the actuary intends to use the other person's work;

- Communication to the other person of any information known to the actuary that may affect the other person's work, and vice versa; and
- Study of any report by the other person and discussion of it with the other person, especially of any reservation in the report.

.08 The Canadian Institute of Actuaries encourages its members to use the work of an auditor in accordance with the Joint Policy Statement included in subsection 1520 of these standards of practice. The Joint Policy Statement also provides useful guidance if the actuary uses the work of a person other than an auditor.

.09 Although an actuary may take responsibility for the work of another actuary in accordance with this section, the actuary who performed the work also continues to be responsible for that work.

.10 In the case of use of another actuary's work, it may also be useful to

- Identify the differences between accepted actuarial practice in Canada and the practice that the other actuary followed if the other actuary worked outside of Canada; and
- Review the other actuary's working papers.

.11 The actuary need not report use of another person's work if the actuary takes responsibility for that work. To do so may imply a reservation.

Use but not take responsibility

.12 If the actuary uses but does not take responsibility for another person's work, the actuary would nevertheless examine the other person's work for evident shortcomings and would either report the results of such examination or avoid use of the work. For clarity, even though the other person may use a model in his or her work, the actuary is not considered to have used that model.

1520 Auditor's use of an actuary's work

.01 The actuary should cooperate with an auditor who wishes to use the actuary's work in accordance with the following Joint Policy Statement. [Effective February 1, 2018]

Joint Policy Statement

concerning communications between auditors and actuaries

involved in the preparation of financial statements

This Joint Policy Statement, effective October 1, 2007, has been approved by the Actuarial Standards Board (Canada) and by the Auditing and Assurance Standards Board (Canada).

Purpose and application

1 The purpose of the Joint Policy Statement is to discuss:

a) communications between actuaries involved in the preparation of financial statements, and auditors, regarding their respective responsibilities;

b) how those actuaries and auditors would interact in carrying out their respective responsibilities; and

c) how their respective responsibilities may be disclosed to readers of financial statements.

2 This Statement applies when an auditor is engaged to carry out an audit of financial statements in accordance with generally accepted auditing standards where the financial statements prepared by management include amounts determined by or with the assistance of an actuary. This Statement also applies when an actuary considers the work of an auditor in connection with conducting the actuarial valuation to determine amounts to be included in the financial statements prepared by management. This statement does not apply to communications with an auditor's actuary or an external review actuary.

3 The financial statements of a pension plan or post-employment benefits plan and of the sponsor of such plans, and the financial statements of an insurance enterprise, are the best examples of when this Statement applies.

Definitions

4 For the purposes of this Statement:

a) "actuary involved in the preparation of financial statements" means an actuary, either an employee of the company or an independent consultant, who determines and reports on amounts to be included in the financial statements prepared by management.

b) "applicable professional standards" means:

i) when the responding professional is an actuary, the Standards of Practice and the Rules of Professional Conduct of the Canadian Institute of Actuaries; and

ii) when the responding professional is the auditor, the Canadian Auditing Standards in the CICA Handbook-Assurance and the relevant independence and other ethical requirements set out in the rules of professional conduct/code of ethics applicable to the practice of public accounting issued by various professional accounting bodies.

c) "auditor" means an auditor who has been appointed to perform an audit and report on financial statements or to perform specified procedures on data;

d) "auditor's actuary" means an appropriately qualified actuary who assists the auditor in assessing risk and performing further audit procedures to respond to assessed risk;

e) "data" includes particulars of:

i) invested assets of a pension plan or post-employment benefits plan or an insurance enterprise,

ii) membership of a pension plan or post-employment benefits plan,

iii) policies of and claims against an insurance enterprise, and

iv) reinsurance of an insurance enterprise;

f) "enquiring professional" means the actuary or the auditor, as the case may be, who is considering the work of the other;

g) "external review actuary" means an actuary who reviews the work of another actuary at the request of a regulator and provides an opinion to the regulator as to whether the work meets applicable professional standards and accepted actuarial practice;

h) "insurance enterprise" includes the following enterprises, including companies, branches, fraternal benefit societies and other forms of organizations:

i) life insurance enterprises;

ii) property and casualty insurance enterprises;

iii) reinsurance enterprises; and

iv) workers' compensation enterprises.

i) "management" refers to any person(s) having authority and responsibility for planning, directing and controlling the activities of an enterprise;

j) "responding professional" means the actuary or the auditor, as the case may be, whose work is being considered by the other.

Responsibilities with respect to financial statements

5 The financial statements are the responsibility of management. The representations contained in the financial statements may include amounts determined by an actuary. In determining those amounts, the actuary is responsible for assessing the sufficiency and reliability of the data used in the valuation. The actuary may consider the work of an auditor with respect to data integrity and controls. In such cases, the actuary involved in the preparation of the financial statements acts as the enquiring professional and the auditor acts as the responding professional.

6 The auditor, on the other hand, has a responsibility to express an opinion on the fairness with which the financial statements present the financial position, results of operations and cash flows in accordance with the applicable financial reporting framework, which will normally be generally accepted accounting principles. When the financial statements include amounts determined by an actuary, the auditor considers the work of the actuary as part of the audit evidence supporting the actuarial valuation. In such cases, the auditor acts as the enquiring professional and the actuary involved in the preparation of the financial statements acts as the responding professional.

Considering the responding professional's work

7 The enquiring professional may consider the work of the responding professional provided that the enquiring professional takes reasonable care to determine that there is a basis for such consideration. This is done by communicating with the responding professional to establish an understanding of the work to be carried out by each and by considering:

a) the responding professional's appointment to do the work;

b) whether the responding professional has followed the standards of his or her profession in carrying out the work; and

c) the appropriateness of the responding professional's findings and opinion.

Communication between the two professionals

8 Communication would be established between the auditor and the actuary involved in the preparation of the financial statements when planning their respective engagements, and further communication would take place as necessary throughout the engagement.

9 On a timely basis, each professional seeks from management the right to:

a) communicate with the other professional; and

b) when necessary disclose any relevant information to the other professional.

10 The enquiring professional would:

a) inform the responding professional of the intended consideration of his or her work in accordance with this Statement;

b) request confirmation from the responding professional that he or she has been engaged by the shareholders, policyholders, directors, or management to do the work that the enquiring professional intends to consider;

c) request confirmation from the responding professional that he or she is a professional in good standing;

d) request confirmation from the responding professional that he or she will carry out the work required in accordance with the applicable professional standards; and

e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of:

i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional’s materiality level in accordance with applicable professional standards;

ii) subsequent events, to determine that the responding professional understands how they are to be treated and that he or she will consider the effect of matters that come to his or her attention up to the date of his or her report;

iii) the timing of the work to be carried out by the responding professional and the date of his or her report; and

iv) any questions relating to the responding professional’s work.

11 The responding professional would provide a written response to the enquiring professional that would:

a) confirm the expectation that he or she is available to perform the work that the enquiring professional intends to consider;

b) confirm that he or she has been engaged by the shareholders, policyholders, directors, or management to do the work that the enquiring professional intends to consider;

c) confirm that he or she is a professional in good standing;

d) confirm that he or she is qualified to perform the work that the enquiring professional intends to consider (including having the certifications or designations, if any, required for particular areas of practice);

e) confirm that this work will be carried out in accordance with the applicable professional standards;

f) confirm awareness of the enquiring professional's intended consideration of his or her work; and

g) discuss any problems expected in meeting the needs of the enquiring professional on a timely basis.

The responding professional's qualifications, competence, and integrity

12 In the case of an auditor, prima facie evidence of professional qualification is membership in good standing in a professional accounting body. In the case of an actuary, prima facie evidence of professional qualification is fellowship in good standing in the Canadian Institute of Actuaries.

13 When the responding professional is not well known to the enquiring professional, the enquiring professional may obtain assurance as to the responding professional's reputation for competence and integrity by consulting with others who are familiar with the responding professional's work.

The responding professional’s findings

14 The responding professional's written response to the enquiring professional after completion of the work would:

a) identify the purpose of the work;

b) identify the financial statements or data to which it relates;

c) identify the responding professional’s relationship to the entity to which the financial statements or data pertain;

d) confirm awareness that the enquiring professional intends to consider the work in accordance with this Statement; and

e) when appropriate, include a copy of the report provided to the party who employed or engaged the responding professional that sets out the findings and, when applicable, opinions of the responding professional, including a representation that the work was performed in accordance with the applicable professional standards.

15 When the enquiring professional has a question about an aspect of the responding professional’s work, the question would be raised with the responding professional who would provide a reasonable explanation about that aspect of his or her work. This does not, however, limit the right of the enquiring professional to any information or explanation that may be required in the performance of his or her duties in accordance with the applicable professional standards.

Disclosure of respective responsibilities to the readers of financial statements

16 When required by law or regulation, a description of the respective responsibilities of the auditor and of the actuary involved in the preparation of the financial statements would accompany the financial statements.

1530 Review or repeat of another actuary's work

.00 The standards in this subsection 1530 apply to a review engagement that is at the instigation of a user. They do not apply to quality control in the first actuary's firm or employer, even if the reviewer is external to the first actuary's firm or employer. The standards for a review engagement also apply, mutatis mutandis, to a repeat engagement.

.01 In this subsection 1530,

- "first actuary" means an actuary whose work is reviewed or repeated,
- "review engagement" means an engagement to review the first actuary's work,
- "reviewer" means the actuary engaged to review or repeat the first actuary's work, and
- "repeat engagement" means an engagement to repeat all or part of the first actuary's work.

.02 Repealed

.03 If the terms of the first actuary's engagement so permit, then the first actuary should cooperate with the reviewer. [Effective February 1, 2018]

.04 If the terms of the review engagement so permit, then the reviewer should, as soon as practical, discuss the review with the first actuary (unless the reviewer's agreement with the first actuary's work makes such discussion superfluous), and should attempt to resolve any difference between them. The reviewer should report the result of such discussion. [Effective February 1, 2018]

.05 If the reviewer reports disagreement with the first actuary's work but that work is within the range of accepted actuarial practice, then the reviewer should so report. [Effective February 1, 2018]

.06 If a limitation in time, information, data, or resources constrained the quality of the first actuary's work, then the reviewer should so report. [Effective February 1, 2018]

.07 If discussion between the two actuaries results in improvement to the first actuary's work or, in the case of periodic reporting, to the work expected for the subsequent report, then the reviewer should so report. [[Effective February 1, 2018]

.08 If the first actuary's work is not within the range of accepted actuarial practice, then the reviewer should so report. [Effective February 1, 2018]

.09 Repealed

Selection of reviewer

.10 The reviewer may be selected by a user of the first actuary's work or by the first actuary. The latter would not be appropriate if it gives rise to a potential conflict of interest (e.g., where the interests of the user and the first actuary's client or employer are opposed), but may otherwise be appropriate if it serves to

- facilitate compliance with this subsection 1530; and
- help assure selection of a qualified reviewer.

.11 In selecting a reviewer, the first actuary would take into consideration the user's objective for the review and would consult with the user as appropriate.

.12 If an actuary is qualified to perform the work of the first actuary, then that is prima facie evidence that the actuary is qualified to be the reviewer.

.13 The perceived objectivity of the reviewer is enhanced if the reviewer is independent of the first actuary.

Timing of the review

.14 The review may take place prior to the release of the first actuary's report ("pre-release review") or after such release ("post-release review"). A pre-release review provides the opportunity for the reviewer to suggest improvement to the work. A post-release review allows such improvement to be implemented only in future work and in some cases might require a withdrawal of the report and revision to the work.

.15 Repealed

Difference between the two actuaries

.16 If the reviewer identifies findings for a difference that is material, the reviewer would so report, along with an explanation of the reason for the difference.

.17 If the reviewer identifies findings for a difference that is not material, the reviewer would avoid reporting such a difference if it would lead to an unnecessary dispute with the first actuary. If the reviewer has access to different data, information, or resources, or has different time constraints than the first actuary had at the time of initial preparation of the report, then the reviewer would so report.

.18 If the reviewer believes that access to different data, information or resources would serve to reduce uncertainty in the interpretation of the work, then the reviewer would so report.

.19 Repealed

.20 Repealed

Appropriate review engagement

.21 The reviewer would consider the appropriateness of a review engagement that precludes discussion with the first actuary, especially if the first actuary will not be apprised that the review is to take place. Nevertheless, such an engagement may be an appropriate engagement, where, for example

- the interests of the first actuary's client or employer and the reviewer's client or employer are opposed, especially so in the case of actuarial evidence work involving litigation or mediation.
- the reviewer's client or employer is a judicial, legal or regulatory authority who is investigating the first actuary's conduct or the conduct of the first actuary's client or employer.
- the review is merely preliminary to a further review in which timely open discussion between the two actuaries will be possible.

.21.1 An engagement that limits or delays discussion between the two actuaries may be an appropriate engagement if the reviewer's client or employer wants to ensure that the two reports are independent of each other.

.22 In the case of actuarial evidence work involving litigation or mediation, the reviewer may be asked to report, without discussion with the first actuary,

- results based on assumptions which differ from those in the first actuary's report, or
- alternatives to the first actuary's reported results that are within the range of accepted actuarial practice.

Such an engagement would be an appropriate review engagement.

.23 Repealed

Repeat engagement

.24 A repeat engagement would be an appropriate engagement if its purpose is to identify or reduce uncertainty in the interpretation of the first actuary's work.

.25 If the second actuary knows or suspects that the engagement is a repeat engagement, then he or she would take into account the possibility that the client or employer is "opinion shopping" when determining if it is an appropriate engagement. Such an engagement may not be an appropriate engagement.

1600 Assumptions and Methods

1610 Methods

.01 The actuary should select a method that takes account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The basis for calculating actuarial estimates is comprised of a method and one or more assumptions. Methods represent the underlying manner in which actuarial calculations are undertaken. Methods differ from one area of actuarial practice to another and have differed over time.

.03 In selecting an appropriate method, the actuary would consider whether any method is mandated by law, by practice-specific standards or by the terms of the engagement.

1620 Assumptions

.01 The actuary should identify and select each assumption that is needed for the work, except for those that are prescribed, that are mandated by law or that are stipulated by the terms of the engagement. [Effective February 1, 2018]

.02 The actuary should select an appropriate model or data assumption for a matter as the best estimate assumption relating to that matter, modified, if appropriate, to make provision for adverse deviations. In selecting an assumption, the actuary should take account of the circumstances affecting the work, past experience data, the relationship of past to expected future experience, anti-selection, and the relationship among matters. [Effective February 1, 2018]

.03 The appropriate assumption for a matter, other than a model or data assumption, should be continuation of the status quo, unless there is none or unless there is a reasonable expectation that it will change, and the actuary so reports. [Effective February 1, 2018]

.04 Throughout the standards, the word “calculation” appears, but not as a defined term. It can imply a mathematical operation as simple as adding two numbers or as complex as a scenario of financial condition testing. “Calculation” does not necessarily imply that a model is used. The word “calculation”, when used in the context of a model, emphasizes the result of a model run and to a lesser extent model specification and model implementation.

.05 It may be useful, under the terms of the engagement, to report the result of two assumptions without opining on their relative appropriateness and to recommend that each user select that which meets his or her needs.

Model assumptions

.06 The model assumptions are quantitative assumptions in a model about

- Contingent events;
- Investment return and other economic matters, such as price and wage indices; and
- Numerical parameters of the environment, such as the income tax rate.

.07 There is a model assumption for each of the matters that the actuary's model takes into account. Those matters would be sufficiently comprehensive for the model reasonably to represent reality.

.08 A model, whether simple or complex, requires model assumptions. The model depends on the purpose of the work and the sensitivity of the model run to the various matters about which assumptions could be made. The actuary would strike a balance between the complexity needed for reasonable representation of reality and the simplicity needed for a practical calculation. If the model specification does not take into account a matter, the result is an implicit assumption about that matter, usually an assumption of zero probability or of zero rate. The actuary may compensate for an inappropriate implicit assumption regarding a matter that the model specification does not take into account by altering the explicit assumption regarding a matter that the model does take into account.

.09 For models with interrelated model assumptions, the actuary would consider the interaction between assumptions.

Data assumptions

.10 Data assumptions are the assumptions, if any, needed to relieve insufficiency or unreliability in the data.

.11 The available data may be not sufficient or not reliable. For example, files of pension plan members may lack the date of birth of the members' spouses. Based on sampling, or on comparison with comparable data, it may be appropriate to assume a relationship between spouse and member ages; for example, that a male spouse's date of birth is three years before the member's, and that a female spouse's date of birth is three years after the member's.

Assumptions other than model and data assumptions

.12 The assumptions other than model and data assumptions are the assumptions about the legal, economic, demographic, and social environment upon which the model and data assumptions depend.

.13 Such other assumptions are usually qualitative, dealing with the environment; for example,

- Legislation, like the Income Tax Act (Canada);
- Student education;
- The medical care system;
- Government social security systems; and
- International treaties.

.14 Those assumptions are needed to the extent that the model assumptions and, in some cases, the data assumptions depend upon them. Such assumptions are numerous and it is not practical to identify all of them.

.15 Continuation of the status quo is usually the appropriate assumption for other than model and data assumptions; for example, an assumption that the fund of a registered pension plan continues not to be taxed or that the capital markets remain more or less as they are. Users may infer that assumption except where the actuary reports otherwise. The actuary would report an assumption

- That is different from continuation of the status quo; and
- Regarding a matter for which there is no status quo, for example, a student's assumed occupation after completion of education.

Acceptable range

.16 There is a reasonable range of assumptions that may be selected by an actuary for particular work and that might produce materially different results. Sometimes, it is desirable that actuaries produce results within a relatively narrow range, in which case the practice-specific standards may prescribe certain methods and/or assumptions to achieve that purpose.

Circumstances affecting the work

.17 Knowledge of the circumstances affecting the work may require consultation with the persons responsible for the functions that affect experience. For example, if the calculation is to value the assets or liabilities of a benefits plan, the actuary would consult the persons responsible for investments, administration, and plan provisions. If the calculation is to value the policy liabilities of an insurer, the actuary would consult the officers responsible for investments, underwriting, claims, marketing, product design, policy dividends, and policy servicing.

.18 An assumption about a matter would take account of the circumstances affecting the work if those circumstances affect that matter. The circumstances affecting the work are relevant for experience in most matters other than economic matters.

Past experience data

.19 The available and pertinent past experience data are helpful in the selection of assumptions.

.20 Other things being the same, pertinent past experience data are data

- Relating to the case itself rather than to similar cases;
- Relating to the recent past rather than to the distant past;
- That are homogeneous rather than heterogeneous; and
- That are statistically credible.

These criteria may conflict with each other.

Expected future experience vs. past experience

.21 To extrapolate pertinent past experience and its trend to the near future is often, but not necessarily, appropriate.

.22 The appropriateness of the extrapolation depends on the matter assumed. For example, pertinent past mortality experience is a better indicator of the outlook than is pertinent past investment return experience.

.23 An extrapolation would take account of a change that affects the outlook. For example,

- Adoption of a subsidized early retirement option in a pension plan may affect retirement rates;
- A change in an insurer's case estimate practices may affect its claims development;
- An insurer's discontinuance of a line of business may affect its expense rates allocable to the remaining lines; and
- A change in judicial practice may affect the settlement of claims.

Anti-selection

.24 Each assumption would normally take account of potential anti-selection.

.25 One party in a relationship may have the right (or the administration of the relationship may give the privilege) to exercise certain options. That party may be, for example, an insurer's policy owner, a benefits plan's member, a borrower, a lender, or a shareholder.

.26 Examples are the right or privilege of a

- Pension plan member to select his or her retirement date when the pensions at various retirement ages are not actuarially equivalent;
- Policy owner to renew term life insurance at its expiry for a stipulated premium;
- Mortgagor to prepay principal, or an issuer to call a bond or redeem a preferred share; and
- Shareholder to retract a share.

.27 When considering a single relationship, it is reasonable to expect that party to exercise those options to the detriment of the other party in the relationship if it is to the first party's advantage to do so. However, where a number of such relationships are concerned, such as a portfolio of policy owners or members of a benefit plan, it may not be reasonable to assume that every one of these would exercise such an option in that manner.

.28 The extent of anti-selection depends on

- The size of the advantage from each exercise of the option (for example, anti-selection is dampened if the advantage to each policy owner is small even when the aggregate potential detriment to an insurer is large);
- The concomitance of exercise of the option (for example, election of a favourable early retirement pension may force the plan member into unwanted unemployment, or a policy owner (who is also the life insured) in ill health may be unable to afford to continue an insurance policy with a low premium);
- The policy owner's or plan member's difficulty in making the required judgment (for example, everyone knows his or her age, but a person may be unable to gauge the effect of ill health on longevity); and
- The sophistication of the policy owner, plan member, borrower, lender, or shareholder.

Independently reasonable and appropriate in the aggregate

.29 The assumptions that the actuary selects or for which the actuary takes responsibility, other than alternative assumptions selected for the purpose of sensitivity testing, would be independently reasonable and appropriate in the aggregate.

.30 The actuary would select independently reasonable assumptions. The following are examples:

- For a typical defined benefit pension plan valuation, the actuary would adopt an explicit investment assumption, as well as an explicit expense assumption rather than using implicit assumptions incorporated within a net discount rate. However, for a small defined benefit pension plan, the actuary may choose to use approximations for the investment expenses.
- For a typical non-participating life insurance portfolio where experience is not passed on to policy owners, all assumptions would be established independently. However, for a typical participating life insurance portfolio where experience is passed on to policy owners through changes to the dividend scale, a reasonable representation of reality would be to assume that the current dividend scale and current experience persist into the future, as long as any implicit offsets in assumptions simplify the valuation and do not materially affect the amount of the valuation.

.31 The actuary would avoid the use of independently reasonable assumptions that are inconsistent or biased in the same direction, either of which might result in the assumptions not being reasonable in the aggregate. If an assumption is prescribed, is mandated by law or is stipulated by the terms of the engagement, it would not be appropriate to compensate for this prescription or stipulation by modifying other assumptions. The remaining assumptions would be reasonable in the aggregate and to the extent possible be independently reasonable.

.32 The use of independently reasonable assumptions implies that each assumption is explicitly defined. However, there would be no requirement to use explicit assumptions in the model specification, as long as the result of using that model does not produce a material error. For example, for pension valuations, use of a discount rate net of expenses may produce a value very close to the value obtained by using explicit assumptions. In this case, the actuary would disclose both the gross investment rate assumption and the expense assumption.

Stipulated or mandated assumptions

.33 Use of an assumption stipulated by the terms of the engagement is use of the work of another person.

.34 If the assumption is mandated by law and an amendment to the law is virtually definitive, it may be useful to report a result that reflects the amendment.

Discount rate

.35 The use of a discount rate is inherent in the actuarial present value method. The discount rate may be constant or it may vary over time. In selecting the best estimate assumption for the discount rate, the actuary, consistent with the circumstances affecting the work, may either

- Take into account the expected investment returns of the assets that support the liabilities; or
- Reflect interest rates on relevant fixed income reference securities.

.36 In selecting the best estimate assumption for the discount rate, the actuary, consistent with the circumstances affecting the work, may assume that the yields on fixed income investments at future dates, either

- Remain at levels applicable at the calculation date; or
- Revert in the long term to expected levels.

1630 Provision for adverse deviations

.01 The actuary should include a provision for adverse deviations in calculations only to the extent required by the terms of the actuary's engagement or as mandated by law or as prescribed by practice-specific standards. [Effective February 1, 2018]

1640 Comparison of current and prior assumptions

.01 Unless the actuary reports the inconsistency, the assumptions for a calculation for a periodic report should be consistent with those of the prior calculation. [Effective February 1, 2018]

.02 The definition of consistency for the purpose of this recommendation varies among practice areas. For example,

- For advice on funding a pension plan, the assumption at a calculation date is consistent with the corresponding assumption at the prior calculation date if the two are numerically the same; and
- For valuation of an insurer's insurance contract liabilities for its financial reporting, an assumption at a calculation date is consistent with the corresponding assumption at the prior calculation date if the two assumptions
    - Each reflect the conditions and outlook at their respective calculation dates in the case of a best estimate assumption;

- Each reflect the risks at their respective calculation dates in the case of a margin for adverse deviations; and
- Are located at the same point within the range of accepted actuarial practice.

.03 If the assumptions are not so consistent, the actuary would report the inconsistency. If practical, useful and appropriate under the terms of the engagement, the report would quantify the effect of the inconsistency.

1700 Reporting

1710 Reporting: external user report

.01 In an external user report, the actuary should

- Identify the client or employer;
- Describe the work, its purpose, and its users;
- Say that use of the report may not be suitable for another purpose;
- Say whether or not the work is in accordance with accepted actuarial practice in Canada and, if not, disclose the deviation from that practice;
- If useful, disclose any unusual application of accepted actuarial practice;
- If the report is supported by the use of a model, disclose limitations in the model relevant to the intended purpose;
- Disclose any aspect of the work for which the actuary does not take responsibility;
- Describe each assumption used for the work that is material to the results of the work, including the extent of any margin for adverse deviations included with respect to each such assumption;
- Provide the rationale for each such assumption that is material to the results of the work;
- For matters requiring an assumption other than a model or data assumption, disclose any assumption that is different from assumption of continuance of the status quo and, if practical, useful, and appropriate under the terms of the engagement, disclose the effect of alternative assumptions;
- Describe the methods used for the work;
- In the case of a periodic report, disclose any inconsistency between the assumptions and methods of the current and prior reports and the rationale for such inconsistency;
- Describe any subsequent event that is not taken into account in the work;
- Disclose any reservation;
- Express an opinion on the assumptions and methods used for the work;
- Express an opinion on the results of the work;
- Identify himself or herself and sign the report; and
- Date the report. [Effective February 1, 2018]

.02 Any description or disclosure may be in material referred to in the report and either accompany the report or plausibly be available to users. [Effective February 1, 2018]

.03 Subsequently, the actuary should respond to a user's request for explanation except if that is contrary to the terms of the engagement. [Effective February 1, 2018]

.04 Subsequently, the actuary should withdraw or amend the report if information comes to hand after the report date that invalidates the report. [Effective February 1, 2018]

.05 A duty of confidentiality in an appropriate engagement supersedes any of the foregoing portions of this recommendation with which it conflicts. [Effective February 1, 2018]

Description and disclosure in general

.06 The range of appropriate reports is relatively narrow for external user reports as compared to that for internal user reports. An external user report would be relatively formal and detailed when the actuary does not communicate directly with users or when the interests of an external user and of the actuary's client or employer are not the same.

.07 Appropriate description and disclosure in a report strike a balance between too little and too much. Too little disclosure deprives the user of needed information. Too much disclosure may exaggerate the importance of minor matters, imply a diminution of the actuary's responsibility for the work, or make the report hard to read.

.08 The appropriate criterion for description and disclosure is the question, "What qualitative and quantitative information best serves the user's understanding and decision-making?" The question, "What information does the user want?", is an insufficient criterion because the circumstances affecting the work may make the actuary aware of information needs of which the user is unaware.

.09 The actuary would consider and address the sensitivity of the results of the work to variations in key assumptions where practical, useful, and consistent with the terms of the engagement.

.10 Disclosure need not necessarily be in the report itself except if its importance so warrants or if it cannot be referenced in material available to users. Disclosure in a short report may place undue emphasis on the information disclosed.

.11 An unintended reservation misleads the user if it implies either that there was a deviation from accepted actuarial practice or that the actuary does not take full responsibility for the work. The following are examples.

- Approximation is a usual part of work. Even a moderately complex calculation may involve many approximations. Disclosure of an appropriate approximation may mislead the user by implying that the actuary's work falls short of accepted actuarial practice.
- Use of another person's work is also a usual part of work. If the actuary does not take responsibility for the used work, disclosure is appropriate. Disclosure if the actuary does take responsibility for the used work may mislead the user.
- Deviation from a particular recommendation or other guidance in the standards when the result of doing so is not material is also a usual part of work and its disclosure is undesirable.

The work, its purpose, and its users

.12 Description of the work usually includes the calculation date and the numerical result. If the work is mandated by law, citation of the law is useful.

.13 The amount of detail depends mainly on the needs of users. A separate report may be desirable for a particular user (usually a regulator) whose desire for detail significantly exceeds that of other users.

.14 Description of the purpose of the work and its users permits another person to assess its appropriateness to his or her needs and may thereby avoid unintended use of the work.

.15 The users comprise the addressee(s) of the report, and any others explicitly identified in the report. Where a report has more than one user, the actuary would have regard to the information of value to each user in determining appropriate disclosure.

Accepted actuarial practice

.16 If the work is in accordance with accepted actuarial practice, a simple statement to that effect is a powerful statement, and reassuring even to a user with a limited understanding of what constitutes accepted actuarial practice. If the work is not in accordance with accepted actuarial practice, a statement that it is, except for specified deviations, is a concise description.

.17 Any deviation from accepted actuarial practice would result from either conflict with law or conflict with the terms of an appropriate engagement.

.18 For work in Canada, the actuary would refer to "accepted actuarial practice for work in Canada", or use other language of equivalent meaning and clarity.

.19 For work outside of Canada, the actuary may choose to refer to

- "Accepted actuarial practice for work in [country]", if the guidance of a foreign jurisdiction has been applied to the work;
- "Internationally accepted actuarial practice", if the guidance of the International Actuarial Association has been applied to the work; or
- "Accepted actuarial practice for work in Canada", if Canadian guidance has been applied to the work because of the absence of applicable foreign guidance.

Unusual application of accepted actuarial practice

.20 The actuary would not usually report a deviation from a particular recommendation or other guidance in these standards as a result of an unusual or unforeseen situation.

.21 If, as is common, accepted actuarial practice for an aspect of the work encompasses a range, the actuary usually reports the work as being in accordance with accepted actuarial practice without drawing particular attention to his or her selection within the range. Disclosure of the selection, and of the reason for selecting it, is appropriate, however, if it is

- Mandated by law or specified by the terms of the actuary's engagement;
- Excluded from the accepted range by an exposure draft or by approved, but not yet effective, new standards;
- Inconsistent with the corresponding assumption of a prior periodic report;
- Dependent on a special permissive feature in the law for its acceptability; or
- Unusual or controversial.

Limitation to actuary's responsibility

.22 Any diminution of the actuary's responsibility for the work as a result of an engagement whose terms call for a deviation from accepted actuarial practice would be disclosed.

Disclosure of assumptions

.23 Where an assumption or method is mandated by law, the actuary would, if relevant, disclose that use of the report, based on the mandated assumption or method, may not be appropriate for purposes other than that for which the report was prepared.

Subsequent event not taken into account in the work

.24 An example of a subsequent event not taken into account in the work is a non-retroactive increase in the benefits of a pension plan for which the actuary is advising on funding. The actuary would describe the increase, report that it was not taken into account in the current advice on funding but that it will be taken into account in future advice. If useful, the actuary would quantify its effect, for example, by reporting the pro forma effect on the recommended funding if the benefit increase were effective immediately before the calculation date.

Reservations

.25 A report with reservation may be unavoidable in certain circumstances, such as the following:

- The actuary was obliged to use the work of another person and has doubts about the appropriateness of so doing.
- The actuary was unable to arrive at a conclusion as to the sufficiency and reliability of the data.
- There was an undue limitation to the scope of the actuary's work. For example, the time, information, or resources contemplated by the terms of the engagement did not materialize.
- There is an unresolved conflict of interest.

.26 The actuary would report any remedy, underway or expected, to the problem causing the reservation.

.27 A serious reservation may call for consulting with another actuary or obtaining legal advice.

.28 Barring explicit disclosure to the contrary in the report, the user is entitled to assume that

- The work is in accordance with accepted actuarial practice and no reservation is required;
- The data are sufficient and reliable; and
- If a periodic report, the method is the same as that in the prior report and the assumptions are consistent with those in the prior report.

Use of models

.29 An external user report would rarely refer directly to a model. Disclosures related to a model are typically found in supporting documents. The report would contain a reference to a model if, for example, the actuary is required to do so by the engagement, the model has limitations relevant to the purpose of the engagement, or the actuary is unable to assess model risk.

.30 Explanation of the limitations of a model and the implications of those limitations would include descriptions of

- any relevant exclusions from the model, and
- simplifying assumptions made.

.31 If the actuary uses a model outside the domain of actuarial practice and is not able to verify the appropriateness of using such a model, the actuary would so report.

Opinion

.32 In giving an opinion on any matter in the report, the actuary would begin with "In my opinion..." which is a signal that the actuary is giving a formal, professional opinion.

.33 With respect to any assumption or method specified by the terms of the engagement, the actuary would

- If the actuary considers such assumption or method to fall within the range of accepted actuarial practice, opine that the assumption or method is appropriate;
- If the actuary considers such assumption or method to not fall within the range of accepted actuarial practice, report that the assumption or method is not in accordance with accepted actuarial practice and report that the assumption or method was specified by the terms of the engagement, as applicable;
- If the actuary is unable to easily determine whether the assumption or method falls within the range of accepted actuarial practice, report that the assumption or method may not be in accordance with accepted actuarial practice and report that the assumption or method was specified by the terms of the engagement, as applicable.

.34 It may be convenient to group the opinion statements in the external user report in a section with a heading such as Statement of Opinion that would be signed by the actuary.

Identification

.35 For work in Canada, the actuary would usually identify himself or herself simply as "Fellow, Canadian Institute of Actuaries" (or "FCIA" if users recognize the abbreviation), especially when Fellowship in the CIA is required or expected for the work.

Report date

.36 In reporting an opinion, the actuary would consider all available information up to the report date, including subsequent events if the report date is after the calculation date.

.37 The report date would usually be the date at which the actuary has substantially completed the work. The remaining effort may include peer review, typing and photocopying the report, and compilation of documentation.

.38 The date the actuary signs and delivers the report would be as soon thereafter as practical. If there is an unavoidably long delay, however, the actuary would consider any additional subsequent events that would result from a current report date.

.39 The actuary would issue the report within a reasonable time period with regard to the actuary's terms of engagement and the needs of the users of the report.

Withdrawal or amendment of a report

.40 After the report date, the actuary has no obligation to seek additional information that, if known at the report date, would have been reflected in the work, but, if additional information comes to hand, the actuary would consider if it affects the report. Additional information affects the report if it

- Reveals a data defect or a calculation error;
- Provides additional information about the entity that is the subject of the report as that entity was at the calculation date;
- Retroactively makes that entity different at the calculation date; or
- Makes that entity different after the calculation date and a purpose of the work was to report on the entity as it would be as a result of the information.

.41 Additional information may consist of both external information and internal discovery of an error in the work. Its classification is similar to the classification of subsequent events. That is, if the additional information results in the actuary determining that an event has occurred that would have to be taken into account in the data, assumptions, or methods for the work, it would affect the report. It does not affect the report if it makes the entity, which is the subject of the report, different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date; for example, if the additional information changes the outlook for the entity that would lead the actuary to select different assumptions at the next calculation date for a periodic report.

.42 If the additional information results in the actuary determining that an event has occurred that affects the report, the actuary would determine whether the event invalidates the report. If the actuary determines that the event does not invalidate the report, the actuary would consider whether to inform some or all of the users of the report about the event. If the actuary determines that the event invalidates the report, the actuary would withdraw or amend the report. If the actuary withdraws or amends a report, he or she would seek agreement with the client or employer on the notification to be given to users and on the preparation of an amended or replacement report in cases where there is no legal requirement to do so. Failing such agreement, the actuary would consider seeking legal advice on the discharge of his or her responsibilities, taking consideration of the fact that, to the extent practical and useful, all users should so be informed.

.43 The following examples are intended to assist actuaries in determining whether an event of which the actuary becomes aware after the report date may be worthy of disclosure to the users of the report or may require the report to be withdrawn or amended:

- If an event affects a report, but that report has been superseded by another report, typically no action would be taken with respect to the prior report;
- If an event materially affects the financial position, financial condition, or funded status of a pension plan, but does not materially affect the funding of the plan, it may be sufficient to disclose the event to the users of the report rather than withdraw or amend the report;
- If an event results in a situation where an assumption used in the work is obviously erroneous, but the assumption was reasonable at the report date, the actuary would typically not withdraw or amend the report, but would reflect the event in a subsequent report; and
- If an actuary has prepared a report that provides advice on the funding of a pension plan and, subsequent to the report date discovers an error in the report, and the funding recommendations contained in the report would change materially if the error were corrected, the actuary may determine that it is appropriate to withdraw or amend the report.

1720 Reporting: internal user report

.01 In the case of an internal user report, the actuary may appropriately abbreviate the recommendation for external user reports. [Effective February 1, 2018]

.02 The range of appropriate reports is wider for internal user reports than for external user reports. At one end of the range, a formal internal user report may differ little from an external user report. At the other end of the range, an informal, abbreviated, even oral, report may suffice for a representative of the actuary's employer or client with whom the actuary communicates frequently and who is well-versed in the subject of the report. To abbreviate the standards for an internal user report is efficient for both the actuary and the user provided that complete and clear communication is not thereby compromised.

1730 Reporting: oral report

.01 Oral reporting, especially to an internal user, is both useful and inevitable in some situations. The disadvantage of oral reporting is that the actuary and user may have differing recollections of what was reported. It is therefore good practice to confirm an oral report in writing, especially when there is an external user, or to record it in documentation.

.02 Except for signature and report date, the standards are the same for both oral and written reports.

1740 Summary report

.01 Where required by practice-specific standards, the actuary should prepare a summary report. [Effective February 1, 2018]

.02 The practice-specific standards specify the language to be used in the summary report.

.03 The purpose of the summary report is to simplify the actuary's communication with users and may be incorporated in a report prepared by the actuary's employer or client; for example, the financial statements of an insurer, a pension plan or a public personal injury compensation plan. Such a report does not constitute an external user report.

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2100 Insurance Contract Valuation: All Insurance

2110 Scope

.01 Part 1000 applies to work within the scope of part 2000.

.02 Section 2100 applies to all kinds of insurance.

.03 Section 2200 applies to property and casualty insurance.

.04 Section 2300 applies to life and health (accident and sickness) insurance.

.05 Sections 2400 and 2500 apply to all kinds of insurance.

.06 Section 2600 applies to property and casualty insurance.

.07 Section 2700 applies to life and health (accident and sickness) insurance.

.08 Part 2000 does not apply to post-employment benefit plans covered by the Practice-Specific Standards for Post-Employment Benefit Plans, nor does it apply to personal injury compensation plans covered by the Practice-Specific Standards for Public Personal Injury Compensation Plans.

.09 The legal form of the insurer is not relevant for purposes of the application of part 2000.

.10 Sections 2100, 2200, and 2300 apply to the valuation of the insurance contract liabilities and reinsurance recoverables in an insurer's financial statements when the intent is that those statements be in accordance with generally accepted accounting principles in Canada, whether or not the insurer is a publicly accountable enterprise[1]. They also apply where statutory or regulatory instructions require the actuary to value the insurer's policy liabilities in accordance with accepted actuarial practice.

.11 In certain cases, methodology described in one of sections 2200 or 2300 may be useful for the insurance to which the other section applies. For example, while a simple technique is usually appropriate for valuation of claim liabilities for life and health insurance, the more sophisticated techniques used for property and casualty insurance may be appropriate for life and health insurance contracts for which claim development is complex. Similarly, for travel insurance and other short-term policies sold by property and casualty insurers, a simple technique may be appropriate.

[1] The *CPA Canada Handbook* contains both Canadian generally accepted accounting principles applicable to publicly accountable enterprises (i.e., International Financial Reporting Standards) and Canadian generally accepted accounting principles applicable to private enterprises and not-for-profit organizations.

2120 Method

.01 The actuary should value the insurance contract liabilities and the reinsurance recoverables for the statement of financial position and the changes in them for the statement of income. [Effective April 15, 2017]

.02 The actuary should coordinate the valuation with the insurer's accounting policy as respects the choice between going concern and wind-up accounting, and so that the insurance contract liabilities, reinsurance recoverables, and other items in the statement of financial position

- Are consistent;
- Avoid omission and double counting; and
- Conform to the presentation of the statement of income. [Effective April 15, 2017]

.03 The relevant insurance contracts for the valuation are those that are in force, including those whose issue is then committed, at the calculation date, or that were in force earlier and that will generate cash flow after the calculation date. [Effective April 15, 2017]

.04 The insurance contract liabilities, net of reinsurance recoverables, in respect of each of the relevant insurance contracts should be comprised of the cash flow after the calculation date from the premiums, benefits, claims, expenses, and taxes that are incurred during the term of its liabilities. [Effective April 15, 2017]

.05 The cash flows that comprise the insurance contract liabilities should include the effect of

- Retrospective premium, commission, and similar adjustments;
- Experience rating refunds;
- Reinsurance ceded;
- Subrogation and salvage;
- The exercise of policy owner options; and
- The deemed termination at the end of the term of its liabilities of each policy then in force. [Effective April 15, 2017]

.06 The valuation should take account of the time value of money. [Effective April 15, 2017]

.07 The actuary should ensure that the application of margins for adverse deviations with respect to the insurance contract liabilities and the related reinsurance recoverables results in an increase to the value of the liability net of reinsurance. The provision resulting from the application of all margins for adverse deviations, in addition to increasing the net liability, should be appropriate in the aggregate. [Effective April 15, 2017]

.08 Policy liabilities other than insurance contract liabilities would be valued in conformity with applicable International Financial Reporting Standards and accepted actuarial practice.

Calculation date

.09 Consistent with its definition in part 1000, the term "calculation date" as used throughout part 2000 refers to the effective date of the valuation of assets and liabilities reported in the financial statements (commonly referred to in practice as the "balance sheet date").

The insurer's accounting policy

.10 In preparing the insurer's financial statements, management would choose between going concern and wind-up accounting. The actuary would conform the valuation to that choice. If the actuary believes the choice to be inappropriate, then, after consultation with the auditor, he or she would so report.

.11 Going concern accounting is appropriate for an insurer that is expected to remain open to new business and in satisfactory financial position indefinitely.

.12 Going concern accounting is also appropriate for an insurer that is expected to become closed to new business, but to continue in a satisfactory financial position, either indefinitely or until

- An increase in capital; or
- A combination with, or transfer of its policies to, another insurer in a satisfactory financial condition,

brings financial relief.

.13 Use of the terms "insurance contract liabilities", "policy liabilities", "reinsurance recoverables", "premium liabilities", and "claim liabilities" is desirable in financial statements, but the choice of the terminology and itemization is a management decision. Regardless of the terminology and itemization chosen, the actuary would ensure that all relevant liabilities are identified and valued.

.14 Insurance contract liabilities and reinsurance recoverables consist of premium liabilities and claim liabilities. Claim liabilities are those in respect of benefits and claims incurred on or before the calculation date. The valuation of claims liabilities would reflect all cash flow related to such claims, including benefit payments, expenses and taxes, occurring after the calculation date. Premium liabilities are those in respect of premiums and all other benefits and claims, including their related expenses and taxes, incurred after the calculation date.

.15 When reporting under International Financial Reporting Standards, insurance contract liabilities reported in the insurer's statement of financial position would be presented gross of reinsurance recoverables. The value of the reinsurance recoverables is recorded separately and would be valued appropriately. The valuation of the reinsurance recoverables would take account of not only the reinsurer's share of claims but also reinsurance commissions, allowances, retrospective premium adjustments, and the financial condition of the reinsurer. Where an actuary is valuing, and reporting on, the valuation of policy liabilities other than in compliance with International Financial Reporting Standards, the policy liabilities may be reported net of reinsurance recoverables.

.16 For the purposes of part 2000, the insurance contract liabilities reported in the insurer's statement of financial position would exclude the liabilities of its segregated funds, but would include, in respect of segregated fund contracts, the liabilities of its general fund related to insurance benefits payable under the terms of such contracts, such as guaranteed minimum benefits in excess of policy owner account values.

.17 The insurer's accounting policy may report amounts related to insurance contracts and the assets that support insurance contract liabilities, as part of the insurance contract liabilities, or as separate items in the statement of financial position, or as a mixture of the two. Examples of such related items include

- Deposit liabilities (for example, policy dividends on deposit);
- Incurred but unpaid items (for example, taxes incurred but not paid and policy dividends due but not paid);
- Future tax liabilities and assets (for example, those in connection with the timing differences between accounting and tax liabilities);
- Receivables from, payables to, and deposits by reinsurers;
- Amounts recoverable from policy owners;
- Provisions for asset depreciation; and
- Deferred policy acquisition expenses.

The actuary would value the insurance contract liabilities so that

- In the aggregate, the insurance contract liabilities and those separate items are consistent and avoid omission and double counting; and
- The separate reporting of those items does not affect the insurer's capital.

.18 As respects consistency, the actuary would, for example, ensure that the cash flows included in the insurance contract liabilities and the reinsurance cash flows in respect of the same policies are estimated based on consistent assumptions, except that reinsurance cash flows would also take account of the financial condition of the reinsurer.

.19 As respects double counting and omission, the actuary would, for example, ensure that

- No asset is allocated more than once to support liabilities; and
- The provision for asset depreciation included in the insurance contract liabilities does not duplicate any provision for asset depreciation deducted from the asset side of the statement of financial position.

Relevant insurance contracts

.20 At the calculation date, the relevant contracts for the valuation include

- Policies that are in force at that date;
- policies which, at that date, the insurer is committed to issue; and
- Policies that were in force prior to that date which could generate cash flow after that date.

There are no amounts included in insurance contract liabilities in the financial statements in respect of other policies expected to be issued after the calculation date, whether or not they are expected to be profitable.

.21 There usually are both premium liabilities and claim liabilities in respect of policies that are in force at the calculation date. There may be reinsurance recoverables in respect of insurance contracts that are in force at the calculation date.

.22 There may be claim liabilities in respect of policies that are not in force at the calculation date as a result of outstanding claims incurred while they were in force. There may be premium liabilities in respect of those policies as a result of the right of policy owners to reinstate them, or of their unpaid

- Retrospective premium, commission, and similar adjustments;
- Experience rating refunds; and
- Subrogation and salvage.

There may be reinsurance recoverables related to policies that are not in force at the calculation date as a result of outstanding claims incurred while they were in force.

Cash flows comprising the insurance contract liabilities

.23 The insurance contract liabilities in respect of a relevant policy are comprised of that policy's cash flows after the calculation date that would be incurred during the term of the liability for that policy. Considerations in determining the term of the liability for life and health (accident and sickness) insurance are discussed in section 2300.

.24 The tax cash flows are limited to those generated by premiums, benefits, claims, and expenses, and by the assets that support the insurance contract liabilities. The expense cash flows are limited to those generated by the relevant policies, including overhead allocations. The tax and expense cash flows exclude, for example, tax on investment income from, and the investment expense of, assets that support capital.

.25 The actual timing of cash flow for a given policy may occur beyond the term of its liabilities as a result of lag between an insured event (e.g., the incurring of a claim) and its resultant cash flow. The extension may be prolonged, for example, for a claim payable in instalments under long-term disability insurance, and a claim under product liability insurance that has a long settlement period.

Retrospective premium, commission, and similar adjustments

.26 In determining the value of a contractual right of the insurer to future premiums that depend on past claims experience, the actuary would take account of creditworthiness of the policy owner.

Experience rating refunds

.27 The liability for experience rating refunds would take account of

- The assumptions used in calculating the insurance contract liabilities in respect of those matters which determine experience rating refunds;
- The difference between the basis for the insurance contract liabilities and the corresponding basis in the experience rating; and
- Any cross-rating across coverages in the experience rating.

.28 The experience rating refund element of the insurance contract liabilities would include provision for adverse deviations only for

- Risk of misestimation of interest rates and risk of interest rate changes; and
- Uncertainty in the calculation of the experience rating refund.

.29 The experience rating refund element of the insurance contract liabilities would not be negative except to the extent that in settlement it may be offset against another liability or recovered from policy owners.

.30 Where an insurer holds an asset for an accrued experience rating deficit, the actuary would test the appropriateness and recoverability of the receivable amount using the valuation assumptions and methodology for experience rating refunds, and make an adjustment to the insurance contract liabilities if necessary.

Reinsurance ceded and retroceded

.31 The estimated amount of recovery on account of reinsurance ceded would take account of the financial condition of the reinsurer.

.32 The actuary would assume that the insurer and the reinsurer each exercises its rights under a treaty (e.g., recapture, cancellation or commutation) to its advantage.

Subrogation and salvage

.33 The actuary would either net subrogation and salvage amounts against claims or value them as a separate item, depending on the insurer's accounting policy.

Exercise of policy owner options

.34 Examples of policy owner options are

- The conversion of group insurance or individual term insurance;
- The election of a settlement option in individual life insurance;
- The purchase of additional insurance or coverage without underwriting; and
- The selection of the amount of premiums for universal life insurance.

Deemed termination of remaining policies

.35 The comprised cash flow in respect of a policy that is deemed to terminate at the end of the term of its liabilities would include any amount then payable by the insurer in the event of its termination, modified to take account of the fact that the termination is deemed and not actual. For example, the modification would

- Forego a surrender charge deducted at an actual termination from the policy's account value to calculate its cash value;
- Forego a deduction at an actual termination from the policy's unearned premium to calculate its premium refund; and
- Anticipate a persistency bonus becoming payable at a date after the end of the term of the policy's liabilities if the policy remains in force to that date.

Time value of money

.36 In this context, "supporting assets" means the insurer's assets and asset commitments that support its insurance contract liabilities.

.37 To take account of the time value of money is to express the forecast of periodic future cash flows as an equivalent single amount at the calculation date, thereby reflecting in the value of the liabilities the amount of future investment income forecast to be earned on the supporting assets. There are two common methods of doing so – a roll-forward approach (e.g., the Canadian asset liability method) and a discounting approach (e.g., the actuarial present value method).

.38 The discount rates and forecast of supporting assets used in the valuation, would take account of

- The supporting assets owned at the calculation date;
- The insurer's policy for asset-liability management; and
- Assumptions about investment return after the calculation date.

.39 The actuary would value the insurance contract liabilities and reinsurance recoverables so that their aggregate value in combination with the value of other policy-related items in the statement of financial position appropriately takes account of the time value of money.

Margin for adverse deviations

.40 The margin for adverse deviations reflects the degree of uncertainty of the best estimate assumption. This uncertainty results from the risk of misestimation of and deterioration from the best estimate assumption. The potential for misestimation is greater when the past experience has been more volatile and hence would justify a greater margin. However, the margin for adverse deviations would be based on a forward-looking assessment of the expected experience and would not act as a mechanism to absorb changes in observed experience, such as changes caused by statistical fluctuations.

.41 Where ceded reinsurance is involved, the sign (positive or negative) of a margin for adverse deviations for a given assumption would take account of the impact of the assumption on assumed recapture, cancellation, commutation, or other treaty provisions and of the corresponding impact on insurance contract liabilities net of reinsurance recoverables.

2130 Reporting

.01 The actuary's report should describe

- The valuation and presentation of policy liabilities and reinsurance recoverables for the insurer's statement of financial position and statement of income;
- The actuary's opinion on the appropriateness of those liabilities and recoverables and on the fairness of their presentation; and
- The actuary's role in the preparation of the insurer's financial statements if that role is not described in those statements or their accompanying management discussion and analysis. [Effective April 15, 2017]

.02 If the actuary can report without reservation, then the actuary's report should conform to the standard reporting language, consisting of

- A scope paragraph, which describes the actuary's work; and
- An opinion paragraph, which gives the actuary's favourable opinion on the valuation and its presentation;

otherwise the actuary should modify the standard reporting language to report with reservation. [Effective February 1, 2018]

.03 The actuary's report would conform to relevant Canadian federal and provincial legislation that require the actuary to value the policy liabilities, not only the insurance contract liabilities and related reinsurance recoverables.

Accounting in the statement of financial position

.04 The amount of the insurance contract liabilities is usually the largest amount in the statement of financial position, so that the disclosure of its main components is desirable.

.05 The reference to "policy liabilities", "insurance contract liabilities" and "reinsurance recoverables" in the standard reporting language is adequate if the notes to the financial statements or their accompanying management discussion and analysis verbally define "insurance contract liabilities" and "reinsurance recoverables", and the statement of financial position presents their total amount as a separate item.

Accounting in the statement of income

.06 The standard reporting language implies that the statement of income accounts for the total change in the policy liabilities, consisting of the insurance contract liabilities and the liabilities for policies other than insurance contracts, during the financial reporting period, and that it accounts for the total change in reinsurance recoverables. That accounting is direct in the case of a life insurer's insurance contract liabilities and reinsurance recoverables, whose change is presented as a separate item in the statement of income. That accounting may be indirect in the case of other policy liabilities, if their change is not separately presented, but is included within other items in the statement of income. For example, the item incurred claims would be equal to

- Claims and claim expenses paid during the financial reporting period; plus
- Claim liabilities (which are part of the policy liabilities) at the end of the financial reporting period; minus
- Claim liabilities at the beginning of the financial reporting period.

Such indirect accounting would be considered fair presentation, as would the direct accounting presentation.

Disclosure of unusual situations

.07 The items that the actuary values for the financial statements may be misleading if the financial statements do not present them fairly. The actuary's report signals to the reader of the financial statements that there is, or is not, fair presentation.

.08 In an unusual situation, fair presentation may require explanation of an item that the actuary values for the financial statements. Usually, the notes to the financial statements would provide that explanation, including, where appropriate, disclosure of the situation's effect on income and capital. In the absence of such explanation, the actuary would provide it by a reservation in reporting.

.09 The question, "Will explanation enhance the user's understanding of the insurer's financial position?" may help the actuary to identify such a situation. Unusual situations may include

- Capital appropriated or repatriated on the actuary's advice;
- Off-balance-sheet obligations (e.g., contingent policy liabilities in connection with market conduct);
- Restatement of items for preceding financial reporting periods;
- Inconsistency among financial reporting periods;
- The impracticality of restating any items that are reported in current period financial statements and that were reported inconsistently in preceding period financial statements;
- An unusual relationship between the items in current period financial statements and the expected corresponding items in future period financial statements;
- A change in the method of valuation that does not have an effect in the current financial reporting period but that is expected to have an effect in future financial reporting periods;
- A difference between the insurer's present practices (e.g., policy for setting dividend scales) and those which the actuary assumed in valuing the policy liabilities; and
- A subsequent event.

Consistency across financial reporting periods

.10 Financial statements usually present results for one or more preceding financial reporting periods in comparison to those for the current period. Meaningful comparability requires the financial statement items for the various periods to be consistent, which can be achieved by the restatement of preceding period items that were previously reported on a basis which was inconsistent with that for the current period. A less desirable alternative to restatement is disclosure of the inconsistency.

.11 A change in the method of valuation creates an inconsistency. A change in the assumptions for valuation reflecting a change in the expected outlook does not constitute an inconsistency although, if its effect is material, then fair presentation would require its disclosure.

.12 A change in assumptions that results from the application of new standards may create an inconsistency.

Communication with the auditor

.13 Communication with the auditor is desirable at various stages of the actuary's work. These include

- Use of work in accordance with the CIA/CICA Joint Policy Statement;
- The drafting of common features in the auditor's report and actuary's report;
- The drafting of a report with reservations;
- The presentation of the insurance contract liabilities, policy liabilities other than insurance contract liabilities, and the reinsurance recoverables; and
- The treatment of subsequent events.

Description of the actuary's role

.14 The actuary would report a description of his or her role in the preparation of the insurer's financial statements only if the financial statements or their accompanying management discussion and analysis do not provide that description.

.15 Here is an illustrative description.

"The Appointed Actuary is

appointed by the [Board of Directors] of [the Company];

responsible for ensuring that the assumptions and methods for the valuation of policy liabilities [and reinsurance recoverables] are in accordance with accepted actuarial practice in Canada, applicable legislation, and associated regulations and directives;

required to provide an opinion on the appropriateness of the policy liabilities [net of reinsurance recoverables] at the calculation date to meet all policy obligations of [the Company]. The work to form that opinion includes an examination of the sufficiency and reliability of policy data and an analysis of the ability of the assets to support the policy liabilities; and

required each year to analyze the financial condition of the company and prepare a report for the [Board of Directors]. The analysis tests the capital adequacy of the company until [31 December xxxx] under adverse economic and business conditions."

The wording of the illustrative description conforms to relevant Canadian federal and provincial legislation that require the actuary to value the policy liabilities, not only the insurance contract liabilities.

Standard reporting language

.16 Here is the standard reporting language.

Appointed Actuary's Report

To the policyholders [and shareholders] of [the ABC Insurance Company]:

I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] [statement of financial position] at [31 December xxxx] and their changes in the [consolidated] [statement of income] for the year then ended in accordance with accepted actuarial practice in Canada including selection of appropriate assumptions and methods.

In my opinion, the amount of policy liabilities [net of reinsurance recoverables], makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation.

[Montréal, Québec] [Mary F. Roe]
[Report date] Fellow, Canadian Institute of Actuaries

.17 The language in square brackets is variable and other language may be adjusted to conform to interim financial statements and to the terminology and presentation in the financial statements.

.18 An auditor's report usually accompanies the financial statements. Uniformity of common features in the two reports will avoid confusion to readers of the financial statements. Those common features include

- Addressees: Usually, the actuary addresses the report to the policyholders of a mutual insurer and to both the policyholders and shareholders of a stock insurer.
- Years referenced: Usually, the actuary's report refers only to the current year, even though financial statements usually present results for both the current and prior years.
- Report date: If the two reports have the same date, then they would take account of the same subsequent events.

Reservations in reporting

.19 The examples that follow are illustrative and not exhaustive.

Self-insured organization that is not obligated to have an appointed actuary

.20 Here is an example of a report prepared for an underfunded self-insured organization that is not obligated to have an appointed actuary.

> I have valued the outstanding claim liabilities of [the Self-Insured Liability Plan] for its statement of financial position at [31 December xxxx] in accordance with accepted actuarial practice in Canada, including selection of appropriate assumptions and methods.
>
> As explained in Note [XX], the [Plan's] self-insured liabilities are not fully funded.
>
> In my opinion, and having regard for Note [XX], the amount of policy liabilities makes appropriate provision for all of the [Plan's] outstanding claims and the financial statements fairly present the results of the valuation.

Note [XX] would quantify and describe the actuary's assumptions with respect to the asset shortfall, describe the plan, if any, for its funding, and explain its implications for the financial security of participants and claimants.

New appointment

.21 A newly appointed actuary who is unable to use the predecessor actuary's work, but who has no reason to doubt its appropriateness, would modify the standard reporting language as follows:

> I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] statement of financial position at [31 December xxxx] and, except as noted in the following paragraph, their change in the statement of income for the year then ended in accordance with accepted actuarial practice in Canada, including selection of appropriate assumptions and methods.
>
> The policy liabilities [and reinsurance recoverables] at [31 December xxxx-1] were valued by another actuary who expressed a favourable opinion without reservation, as to their appropriateness.
>
> In my opinion, the amount of policy liabilities [net of reinsurance recoverables], makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation. For the reason stated in the previous paragraph, I am unable to say whether or not those results are consistent with those for the preceding year.

.22 If the actuary doubts the appropriateness of the predecessor actuary's work as a result of a review of it, then the actuary would consider a more serious reservation.

Impracticality of restatement

.23 The actuary would, if necessary, restate the preceding year valuation to be consistent with the current year valuation. If it is not practical to restate the preceding year valuation, then the actuary would modify the opinion paragraph in the standard reporting language as follows:

> In my opinion, the amount of policy liabilities [net of reinsurance recoverables] makes appropriate provision for all policy obligations. As explained in Note [XX], the method of valuation for the current year is inconsistent with that for the previous year. Except for that lack of consistency, in my opinion the [consolidated] financial statements fairly present the results of the valuation.

.24 Note [XX] would usually explain the change in the basis of valuation, explain the impracticality of applying the new basis retroactively, and disclose the effect of the change on the opening equity at the beginning of the preceding year.

Takeover of insurer with insufficient records

.25 If the insurer took over another insurer with records that did not provide sufficient and reliable data for the valuation, then the actuary would modify the standard reporting language as follows:

> I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] statement of financial position at [31 December xxxx] and their change in the statement of income for the year then ended in accordance with accepted actuarial practice in Canada, including selection of appropriate assumptions and methods, except as described in the following paragraph.
>
> During the year, [the Company] took possession of the assets, liabilities, and policies of [WWW Insurer], whose policy records are, in my opinion, unreliable. [The Company] is implementing but has not completed the necessary improvements. My valuation with respect to the policies taken over from [WWW Insurer] therefore involves an unusual degree of uncertainty. The associated policy liabilities [net of reinsurance recoverables] comprise [N]% of [the Company's] total policy liabilities [net of reinsurance recoverables] at [31 December xxxx].
>
> In my opinion, except for the reservation in the previous paragraph, the amount of policy liabilities [net of reinsurance recoverables] makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation.

Liabilities greater than those calculated by the actuary

.26 If the financial statements of an insurer report policy liabilities, net of reinsurance recoverables, that are greater than those calculated and reported by the actuary, and if the notes to those financial statements do not provide sufficient disclosure of the rationale for doing so, then the actuary would report as follows:

> I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for the statement of financial position at [31 December xxxx] and their change in the statement of income for the year then ended in accordance with accepted actuarial practice in Canada, including selection of appropriate assumptions and methods, except as described in the following paragraph.
>
> In my valuation, the amount of the policy liabilities [net of reinsurance recoverables] is $[X]. The corresponding amount in the [consolidated] financial statements is $[Y].
>
> In my opinion, the amount of policy liabilities [net of reinsurance recoverables] of $[X] makes appropriate provision for all policy obligations and, except as described in the preceding paragraph, the [consolidated] financial statements fairly present the result of the valuation.

2200 Insurance Contract Valuation: Property and Casualty Insurance

2210 Scope

.01 This section 2200 applies in accordance with subsection 2110.

2220 Claim liabilities

.01 The amount of the claim liabilities should be equal to the present value, at the calculation date, of cash flow on account of claims (and of related expenses and future income taxes) incurred on or before that date with provision for adverse deviations. [Effective April 15, 2017]

.02 The amount of claim liabilities consists of the following components on a present value basis:

- The amount of the case estimates;
- A provision (which may be positive or negative) for development on reported claims, including claim adjustment expenses;
- A provision for incurred but unreported claims, including claim adjustment expenses; and
- A provision for adverse deviations.

For property and casualty practitioners, this is also referred to as the actuarial present value basis.

.03 The development on reported claims compensates for the inadequacy or redundancy in case estimates.

.04 The incurred but unreported claims are those not yet reported to the insurer, including those reported but not yet recorded.

.05 The development on reported claims and the incurred but unreported claims need not be calculated separately. Some valuation methods calculate only their combined amount.

.06 The selection of valuation methods depends on the circumstances affecting the work. The actuary would usually consider several methods, each of which involves assumptions.

.07 The actuary would consider the circumstances affecting the work in selecting assumptions. The available past claims experience may lack pertinence for assumptions about the insurer's future claims experience as a result of internal changes, such as changes in

- The insurer's underwriting practice;
- Its claims handling practice, including case estimate practice;
- Its reinsurance;
- Its data processing; and
- Its accounting;

and as a result of external changes, such as inflation and changes in

- The legal, regulatory, and legislative environment; or
- Residual mechanisms, like the Facility Association.

.08 The past and future claims experience of a pool or association in which the insurer participates tends to be beyond the insurer's control and may differ from the insurer's own claims experience.

2230 Premium liabilities

.01 The amount of the premium liabilities (after deducting any deferred policy acquisition expense asset) should be equal to the present value, at the calculation date, of cash flow on account of premium development and of the claims, expenses and future income taxes, including provision for adverse deviations, to be incurred after that date on account of the policies in force at that date or an earlier date. [Effective April 15, 2017]

.02 The amount of premium liabilities consists of the following components on a present value basis:

- The future claims and claim adjustment expenses;
- A provision for adverse deviations;
- The expected reinsurance costs (on a net basis only);
- The maintenance costs;
- All other liabilities related to premium development; and
- A premium deficiency, if any.

.03 The actuary would consider the Standards of Practice for claim liabilities in selecting assumptions about claims.

.04 Premium development includes additional premiums such as reinstatement premiums and experience adjustments for policies with retrospective pricing.

.05 Premium deficiency is the amount which, when added to the net unearned premium reserve and unearned (reinsurance) commissions, makes an appropriate provision for future costs arising from the unexpired portion of in-force policies at the calculation date.

2240 Present values

.01 The expected investment return rate for calculation of the present value of cash flows, net of reinsurance, is that to be earned on the assets, taking into account reinsurance recoverables, that support the insurance contract liabilities. The expected investment return depends on

- The assets owned at the calculation date;
- The allocation of those assets and related investment income among lines of business;
- The method of valuing assets and reporting investment income;
- The yield on assets acquired after the calculation date;
- The capital gains and losses on assets sold after the calculation date;
- Investment expenses; and
- Losses from asset depreciation.

.02 The expected investment return rate for calculation of the present value of ceded cash flow may be selected from the following or a combination thereof:

- The investment return rate selected for net present value net of reinsurance (i.e., as described in paragraph 2240.01);
- A risk-free rate; and
- The investment return rate used by the assuming company.

.03 The actuary need not verify the existence and ownership of the assets at the calculation date, but would consider their quality.

2250 Margin for adverse deviations – general

.01 The criteria for selection of the margin for adverse deviations for an assumption are based upon the considerations for that assumption. The selected margin for adverse deviations used in the valuation of insurance contract liabilities should tend toward a higher margin for adverse deviations to the extent that the considerations for that assumption, viewed in the aggregate but considering their individual relative importance,

- Have been unstable during the period covered by the experience data on which the selection of the corresponding expected assumption is based and the effect of that instability cannot be quantified; or
- Otherwise undermine confidence in the selection of the corresponding expected assumption;

and should tend toward a lower margin for adverse deviations to the extent that the opposite is the case. [Effective April 15, 2017]

.02 The selected margin for adverse deviations should vary

- Between premium liabilities and claim liabilities;
- Among lines of business; and
- Among accident years, policy years, or underwriting years, as the case may be,

according to how the considerations of paragraphs 2250.08 and 2250.09 so vary. [Effective April 15, 2017]

Assumptions subject to a margin for adverse deviations

.03 The actuary would include a margin for adverse deviations in the assumptions for

- Claims development;
- Recovery from reinsurance ceded; and
- Investment return rates.

Expression of a margin for adverse deviations

.04 The margin for adverse deviations for claims development would be a percentage of the claim liabilities excluding provision for adverse deviations.

.05 The margin for adverse deviations for recovery from reinsurance ceded would be a percentage of the amount deducted on account of reinsurance ceded in calculating the premium liabilities or claim liabilities, as the case may be, excluding provision for adverse deviations.

.06 The margin for adverse deviations for investment return rate would be a deduction from the expected investment return rate per year.

.07 The actuary would not usually include a margin for adverse deviations in the other assumptions. An example of an unusual circumstance that warrants an exception is a salvage and subrogation assumption when presented as an asset separate from the claim liabilities.

Considerations

.08 The actuary would select and evaluate considerations for each assumption that are appropriate to the circumstances of the insurer, including

- Insurer practices, for example, the guidelines for setting and reviewing case estimates;
- Data, for example, the stability of claims frequency and average claim cost;
- Reinsurance, for example, the history of claim and coverage disputes with reinsurers;
- Investments, for example, the matching of assets and liabilities and risk of asset depreciation; and
- The external environment, for example, the effect of regulatory change on claim settlements.

.09 A consideration for an assumption reduces confidence in that assumption as a result of past or future instability of the consideration or a shortcoming in its quality, quantity, or performance. Significant considerations indicating difficulties in properly estimating the best estimate assumption would include, but would not be limited to

- Instability in the guidelines for setting and reviewing case estimates possibly resulting in inconsistent development among accident years;
- The credibility of the company's experience being too low to be the primary source of data;
- Future experience being difficult to estimate;
- Lack of homogeneity in the cohort of risks;
- Operational risks adversely affecting the likelihood of obtaining the best estimate assumption;
- Past experience not being representative of the future experience and the experience possibly deteriorating; or
- The derivation of the best estimate assumption being unrefined.

2260 Margin for adverse deviations – deterministic analysis

.01 The actuary should select a margin for adverse deviations for an assumption that is at least as much as the amount defined by the low margin for adverse deviations and is not excessive. [Effective April 15, 2017]

.02 The range of margin for adverse deviations would be

	High	Low
claims development	20%	2.5%
recovery from reinsurance ceded	15%	0
investment return rates	200 basis points	25 basis points

.03 Usually, a selection above this high margin for adverse deviations would be considered excessive.

.04 A selection above this high margin for adverse deviations would be appropriate, however, for unusually high uncertainty or when the resulting provision for adverse deviations is unreasonably low because the margin for adverse deviations is expressed as a percentage and the best estimate is unusually low.

.05 A selection below the low margin for adverse deviations may be appropriate in unusual situations. For example, in a situation wherein the best estimate discount rate based on the insurer's asset portfolio is less than 0.25% per annum, a margin for adverse deviations for investment return rates below that specified in paragraph 2260.02 may be reasonable. Similarly, unique situations may support a claims development margin for adverse deviations below that specified in paragraph 2260.02, as in the case of an insurer with aggregate stop loss coverage that is reserved at the stop loss limit.

2270 Margin for adverse deviations – stochastic analysis

.01 The margin for adverse deviations selected based on stochastic techniques should not be less than the low margin for adverse deviations set out in paragraph 2260.02 and should not be excessive. [Effective April 15, 2017]

.02 It is expected that margins for adverse deviations obtained using stochastic techniques would generally be consistent with the range provided in paragraph 2260.02.

.03 In addition to the circumstances described in paragraph 2260.04, a selection above the high margin for adverse deviations set out in paragraph 2260.02 may be appropriate when stochastic modelling indicates variability in estimates of insurance contract liabilities that may not be identified using deterministic analysis.

.04 A selection below the low margin for adverse deviations may be appropriate as set out in paragraph 2260.05.

2300 Insurance Contract Valuation: Life and Health (Accident and Sickness) Insurance

2310 Scope

.01 This section 2300 applies in accordance with subsection 2110.

2320 Method

.01 The actuary should calculate insurance contract liabilities net of reinsurance recoverables by the Canadian asset liability method. [Effective April 15, 2017]

.02 The amount of insurance contract liabilities using the Canadian asset liability method for a particular scenario is equal to the amount of supporting assets, including reinsurance recoverables, at the calculation date that are forecast to reduce to zero coincident with the last liability cash flow in that scenario. [Effective April 15, 2017]

.03 The term of the liabilities should take account of any renewal, or any adjustment equivalent to renewal, after the calculation date if

- The insurer's discretion at that renewal or adjustment is contractually constrained; and
- Insurance contract liabilities are larger as a result of taking account of that renewal or adjustment. [Effective April 15, 2017]

.04 In forecasting the cash flow expected to be generated by an insurance contract, the actuary should

- Take account of policy owner reasonable expectations; and
- Include policy dividends, other than the related transfers to the shareholders' account and other than ownership dividends, in the comprised cash flow from benefits. [Effective April 15, 2017]

.05 The actuary should calculate insurance contract liabilities for multiple scenarios and adopt a scenario whose insurance contract liabilities make sufficient but not excessive provision for the insurer's obligations in respect of the relevant policies. [Effective April 15, 2017]

.06 The assumptions for a particular scenario consist of

- Scenario-tested assumptions, which should include no margin for adverse deviations; and
- Each other needed assumption, whose best estimate should be consistent with the scenario-tested assumptions and which should include margin for adverse deviations. [Effective April 15, 2017]

.07 The scenario-tested assumptions should include at least the interest rate assumptions. [Effective April 15, 2017]

.08 The scenarios of interest rate assumptions should comprise

- A base scenario, as defined under paragraph 2330.14;
- Each of the prescribed scenarios in a deterministic application;
- Stochastic scenarios, as defined in subsection 2370, in a stochastic application; and
- Other scenarios appropriate for the circumstances of the insurer. [Effective April 15, 2017]

Liability grouping and asset segmentation

.09 The actuary would usually apply the Canadian asset liability method to policies in groups that reflect the insurer's asset-liability management practice for allocation of assets to liabilities and investment strategy. That application is a convenience, however, and would not be expected to preclude the calculation of insurance contract liabilities and reinsurance recoverables that, in the aggregate, reflect the risks to which the insurer is exposed.

Other methods

.10 For a particular scenario, another method may be equivalent to, or approximate, the Canadian asset liability method. If the actuary uses that other method, then the calculation for multiple scenarios and the selection of one that makes sufficient but not excessive provision for the insurer's obligations would be the same as for the Canadian asset liability method.

Supporting assets

.11 The value of the assets that support insurance contract liabilities at the calculation date would be their value in the insurer's financial statements.

.12 The forecasted cash flow of the assets would take account of any related, off-balance sheet, financial instruments.

.13 The value of the assets and forecasted cash flow would take account of the insurer's hedging instruments existing at the calculation date.

.14 The forecast of cash flow from taxes would take account of permanent and temporary differences between the amortization of capital gains in accordance with generally accepted accounting principles and tax law.

Term of the liabilities

.15 If an element of a policy operates independently of the other elements, then it would be treated as a separate policy with its own term of liabilities. Examples are

- A flexible premium deferred annuity where the interest guarantee and cash value attached to each premium are independent of those for the other premiums; and
- A certificate of voluntary non-contributory association or creditor group insurance.

.16 The term of a policy's liabilities is not necessarily the same as the contractual term of the policy.

.17 In this context,

- "Renewal" means the renewal of a policy at the end of its term, with the insurer having discretion to adjust premiums or coverage for the new term;
- "Adjustment" means an insurer's unilateral adjustment to a policy's coverage or premiums equivalent to that in a renewal; and
- "Constraint" means a constraint on the insurer's exercise of discretion in renewal or adjustment that results from contractual obligations, legally binding commitments, and policy owner reasonable expectations. Examples of constraint are an obligation to renew a policy unless renewal is refused for all other policies in the same class, a guarantee of premiums, a guarantee of credited interest rate, a general account guarantee of segregated fund value, and a limitation on the amount of adjustment. "Constraint" would not include a price-competitive market expected at renewal or adjustment.

.18 The term of a policy's liabilities takes account of all renewals and adjustments before the calculation date. Depending on the circumstances, that term may also take account of one or more renewals or adjustments after the calculation date.

.19 If the term of the liabilities is not evident, and if selection of a longer term would reduce insurance contract liabilities, then the actuary would be cautious in making such a selection. On the other hand, if selection of a longer term would increase those liabilities, then the actuary would usually select the longer term. Substance would supersede form in the selection; for example, a universal life policy that is in form an annual premium life insurance policy may be in substance a single premium deferred annuity.

.20 The term of the liabilities of

- An insurance contract that has been cancelled by the insurer ends at the effective date of cancellation;
- An insurance contract that has not been cancelled, but that is cancellable by the insurer at or before the date to which its premiums have been paid, ends at that date;
- An individual annual premium life or accident and sickness insurance contract ends at the last day to which the policy owner may prolong its coverage without the consent of the insurer; and
- A certificate of group insurance if the group insurance contract is in effect a collection of individual insurance contracts is the same as if it were an individual insurance contract, unless contributions or experience rating of the group negate anti-selection by certificate holders.

.21 The term of the liabilities of any other insurance contract ends at the earlier of

- The first renewal or adjustment date at or after the calculation date at which there is no constraint; and
- The renewal or adjustment date after the calculation date that maximizes the insurance contract liabilities.

.22 The actuary would extend or amend such term as defined in paragraphs 2320.20 and 2320.21 only

- To permit recognition of cash flow to offset acquisition or similar expenses;
  - Whose recovery from cash flow that would otherwise be beyond such term was contemplated by the insurer in pricing the insurance contract; and
  - Where the value of the additional cash flow recognized by such extension of the term cannot exceed the value of the remaining balance of acquisition or similar expenses; or

For the purpose of the valuation of liabilities related to segregated fund guarantees, as set out in subsection 2360.

.23 The balance of the allowance for acquisition expense would be written down to zero using an appropriate method. Such method would

- Have a term consistent with the extended term established at inception;
- Have a write-down pattern reasonably matched with the net cash flow available to offset these expenses at inception; and
- Be locked in, so that the amount of write-down in each period will not fluctuate from the expected amount established at inception provided such balance is recoverable from the additional cash flow recognized at the calculation date, and where not fully recoverable at the calculation date, is written down to the recoverable amount, with the expected amount of write-down in each future period proportionately reduced.

.24 A change in the outlook may provoke a change in the term of the insurance contract's liabilities. For example, the constraint of a cost of insurance guarantee that previously lengthened the term of the insurance contract liabilities may no longer do so if the outlook for mortality improves. On the other hand, the constraint of a guaranteed credited interest rate that previously was considered innocuous may become meaningful, and thereby lengthen the term of the insurance contract liabilities, if the outlook changes to one of lower interest rates.

.25 For example, the term of the liabilities ends at

- The calculation date for the general account portion of a deferred annuity with segregated fund liabilities but without minimum guarantees (other than a guarantee of an annuity purchase rate); for example, with no guarantee of the segregated fund value;
- The date after the calculation date that maximizes the insurance contract liabilities for guarantees of the fund value for segregated fund annuities whose contracts have no material constraints, and for consistency, for those contracts that contain material constraints;
- The first renewal of a group policy that insures employee benefits, unless there is a constraint at that renewal; and
- The next renewal date or adjustment date even if there is a constraint at renewals and adjustments at and after that date, but the constraint is so weak that its operation does not increase insurance contract liabilities.

Policy owner reasonable expectations

.26 The insurer's policies contractually define its obligations to its policy owners. The contractual definition may leave certain matters to the insurer's discretion, such as

- The determination of policy dividends, experience-rating refunds, and retrospective commission adjustments; and
- The right to adjust premiums.

.27 Matters left to the insurer's discretion implicitly include

- Underwriting and claim practices; and
- The right to waive contractual rights and to create extra-contractual obligations.

.28 Policy owner reasonable expectations are the expectations that

- May be imputed to policy owners as their reasonable expectations of the insurer's exercise of discretion in those matters; and
- Arise from the insurer's communication in marketing and administration, from its past practice, from its current policy, and from general standards of market conduct. Past practice includes the non-exercise of discretion; for example, long non-exercise without affirmation of a right to adjust premiums may undermine it. The insurer's communication includes policy dividend and investment performance illustrations at sale of a policy and that of intermediaries reasonably perceived as acting on its behalf.

.29 In selecting assumptions for the insurer's exercise of discretion in those matters, the actuary would take policy owner reasonable expectations into account. Taking account of policy owner reasonable expectations may affect not only the amount of insurance contract liabilities but also disclosure in the financial statements.

.30 The determination of policy owner reasonable expectations is straightforward when the insurer's practice has been clear, unvarying, consistent with its communications, consistent with general standards of market conduct, and the insurer does not intend to change it. The actuary would discuss any other practice with the insurer, with a view to clarifying policy owner reasonable expectations.

.31 If the insurer makes a change that will eventually alter policy owner reasonable expectations, then the actuary would consider both the appropriate disclosure of the change in policy owner communication and the financial statements, and the time elapsed before the altered expectations crystallize.

.32 A dispute over policy owner reasonable expectations may lead to class action or other litigation by policy owners against the insurer, which may affect insurance contract liabilities or generate contingent liabilities.

Policy dividends

.33 The assumed cash flow from policy dividends would be that from both periodic (usually annual) dividends and terminal and other deferred dividends, but excluding that from the related transfers from the participating to the shareholders' account in a stock insurer.

.34 The assumed cash flow from policy dividends would avoid omission and double counting with other elements of the insurance contract liabilities and with liabilities other than insurance contract liabilities. For example, if the actuary has valued the insurance contract liabilities for participating riders and supplementary benefits in participating policies as though they were non-participating—i.e., with provision for adverse deviations in excess of that appropriate for participating insurance—then the assumed cash flow from policy dividends would be reduced for that excess provision for adverse deviations.

.35 The selected policy dividend scales in a particular scenario would be consistent with the other elements of that scenario, but would take account of how insurer inertia, policy owner reasonable expectations, and market pressure may preclude the dividend scale from being responsive to changes assumed in the scenario. Those scales would also be consistent with the insurer's dividend policy except in a scenario which that policy does not contemplate and which would trigger a change in it.

.36 If the current dividend scale anticipates a future deterioration in experience, then the actuary would assume continuance of that scale in response to that deterioration. If the current dividend scale does not respond to a recent deterioration in experience but the insurer's policy is to do so, and if the delay in doing so does not provoke a contrary policy owner reasonable expectation, then the actuary would assume such response.

.37 An assumption of cash dividends to all policy owners is appropriate only if the alternative options to cash have equivalent value. If the alternatives do not have equivalent value, the actuary would

- Either adjust the cash dividends to reflect the non-equivalence or make explicit assumption about policy owner exercise of the various dividend options; and
- Provide for the anti-selection that will result from increasing exercise of the more valuable options.

Forecast of cash flow

.38 In calculating insurance contract liabilities, the actuary would allocate assets to the liabilities at the calculation date, forecast their cash flow after that date, and, by trial and error, adjust the allocated assets so that they reduce to zero at the last cash flow.

.39 Use of the work of another person may be appropriate for forecasting the cash flow of certain assets, such as real estate.

Income tax and alternative tax

.40 This item deals with cash flow from tax based on income (herein called "income tax") and other taxes not based on income but which interact with income tax; for example, certain capital taxes in Canada (herein called "alternative tax").

.41 The cash flow from such taxes would be limited to that in respect of the relevant insurance contracts and the assets that support their insurance contract liabilities, and thus, with the exception of the recoverability of future tax losses described below, would ignore any interaction between that cash flow and cash flow in the rest of the insurer (e.g., it would ignore tax on investment income from assets that support the insurer's capital). For a particular scenario, forecasted income before tax is equal to zero in each financial reporting period after the calculation date. That is so because that scenario assumes occurrence of the adverse deviations for which it makes provision. If income according to tax rules were equal to income in accordance with generally accepted accounting principles, and if there were no alternative tax, then the corresponding forecasted tax cash flow would also be equal to zero. In reality, however, such tax cash flow may differ from zero because of

- Differences—both temporary and permanent—between income in accordance with generally accepted accounting principles and income in accordance with tax rules;
- The operation of carry-forward and carry-back in the tax rules; and
- Alternative tax and the interaction between it and income tax.

.42 An example of a temporary difference is a difference between insurance contract liabilities and the corresponding tax liabilities.

.43 An example of a permanent difference is a preferential tax rate on the investment income on a class of assets.

.44 The forecast of cash flow from such taxes would therefore take account of positive or negative tax as a result of permanent and temporary differences at, and arising after, the calculation date, and of alternative taxes incurred after the calculation date.

.45 The actuary would make appropriate provision for cash flow on account of such taxes in the insurance contract liabilities. If the insurer's statement of financial position records a future tax asset or liability in respect of such taxes, then, in order to avoid double counting, the actuary would adjust the insurance contract liabilities otherwise calculated upward to reflect the existence of a future tax asset and downward to reflect the existence of a future tax liability.

.46 The realization of negative tax depends on the simultaneous availability of income that is otherwise taxable. In forecasting such income, the actuary would

- Make provision for adverse deviations;
- Take into account the projected tax position of the company overall; but
- Not take account of the expected release of provisions for adverse deviations in the insurance contract liabilities because, as noted above, their calculation implicitly assumes that those adverse deviations occur.

Adverse deviations borne by policy owners

.47 The insurance contract liabilities need not make provision for adverse deviations to the extent that the insurer can offset its effect by adjustments to policy dividends, premium rates, and benefits. The insurer's contractual right of such offset may be constrained by policy owner reasonable expectations, competition, regulation, administrative delays, and the fear of adverse publicity or anti-selection.

.48 In some jurisdictions, regulatory approval may be required for the application of such contractual pass-through features and, in such cases, the actuary would consider the ability to recover past losses, the clarity of any regulatory rules for approval, time delays caused by the approval process, and whether interest losses during this period can be recouped in determining an appropriate total provision.

Adoption of a scenario

.49 If the selection of scenarios is deterministic, then the actuary would adopt a scenario whose insurance contract liabilities are within the upper part of the range of the insurance contract liabilities for the selected scenarios. In the case of interest rate scenarios, the insurance contract liabilities would not be less than those in the prescribed scenario with the largest insurance contract liabilities.

.50 If the selection of scenarios is stochastic, then the actuary would establish insurance contract liabilities that are within the range defined by

- The average of the insurance contract liabilities that are above the 60th percentile of the range of insurance contract liabilities for the selected scenarios; and
- The corresponding average for the 80th percentile.

Scenario-tested assumptions

.51 The provision for adverse deviations in respect of scenario-tested assumptions results from calculating the insurance contract liabilities for multiple scenarios and adopting a scenario whose insurance contract liabilities are relatively high.

Other assumptions

.52 The provision for adverse deviations in respect of each assumption other than the scenario-tested assumptions results from a margin for adverse deviations included in that assumption.

.53 The assumptions unique to a particular scenario are the scenario-tested assumptions and each other assumption that is correlated with them. For example, policy dividends and the exercise of options by borrowers and issuers, are strongly correlated with interest rates. Lapses may be correlated or not, depending on the circumstances. The assumption on a matter not so correlated would be common to all scenarios.

Margin for adverse deviations

.54 The margin for adverse deviations would be at least the average of the applicable high and low margin, as specified in subsections 2340 and 2350, whenever at least one "significant consideration" exists, or at least one other consideration is significant in the context of the valuation. Significant considerations vary by type of assumption and are described under subsections 2340 and 2350.

2330 Scenario assumptions: Interest rates

General considerations

.01 An interest rate scenario comprises, for each forecast period between the calculation date and the last cash flow,

- An investment strategy; and
- An interest rate for each risk-free asset and the corresponding credit spread for each fixed-income asset subject to depreciation.

.02 Each interest rate scenario would include an assumption with respect to the rate of inflation that is consistent with that scenario.

.03 The interest rate scenario would be consistent among the insurer's lines of business.

.04 The investment strategy defines reinvestment and disinvestment practice for each type, depreciation risk classification, and term of the invested assets that support insurance contract liabilities. Assumption of an investment strategy implies investment decisions of reinvestment and disinvestment consistent with that strategy and, hence, the risk inherent in that strategy.

.05 The investment strategy for each scenario would be consistent with the insurer's current investment policy and would be consistent with the insurer's expected practice. The insurance contract liabilities would make no provision for any increased risk that may result from a future change in the insurer's investment policy. The insurer's expected practice would be determined without taking into consideration any business that could be issued after the valuation date (new sales).

.06 The actuary would ensure that the proportion of non-fixed-income assets in the portfolio, at each duration, would be in accordance with the insurer's current investment policy.

.07 The number of assumed terms of risk-free assets would be large enough to permit assumption of changes in the shape and steepness of the yield curve. That implies a minimum of a short, a medium, and a long term.

.08 In all scenarios other than the base scenario, credit spreads include margins for adverse deviations as described in paragraph 2340.14. The actuary would also include an additional provision for adverse deviations by modifying the assumptions, if needed, on each fixed-income asset purchased or sold on or after the 5th anniversary from the calculation date, such that

- For assets purchased or sold on or after the 30th anniversary from the calculation date, the difference between the asset's credit spread and its asset depreciation assumption, the net credit spread is not larger than a maximum promulgated from time to time by the Actuarial Standards Board; and
- For assets purchased or sold between the 5th and 30th anniversary from the calculation date, the net credit spread is not larger than that determined using a uniform transition between the corresponding difference if the asset were purchased on the 5th anniversary from the calculation date and the promulgated maximum if the asset were purchased on the 30th anniversary from the calculation date.

.09 A scenario for a foreign country's interest rates would be formulated independently of that for Canadian interest rates unless a positive historical correlation is expected to continue.

.10 The importance of the assumptions for a particular forecast period depends on the magnitude of the net forecasted cash flow for that period.

.11 The Actuarial Standards Board will promulgate from time to time the following ultimate risk-free reinvestment rates for use in the base scenario and the prescribed scenarios

- Short-term ultimate risk-free reinvestment rate-high;
- Long-term ultimate risk-free reinvestment rate-high;
- Short-term ultimate risk-free reinvestment rate-median;
- Long-term ultimate risk-free reinvestment rate-median;
- Short-term ultimate risk-free reinvestment rate-low; and
- Long-term ultimate risk-free reinvestment rate-low.

.12 Ultimate risk-free reinvestment rates at other terms would be determined in accordance with the historical relationship between rates at those terms and the short- and long-term rates. Ultimate risk-free reinvestment rate-low refers to low rates at all terms (including short-term ultimate risk-free reinvestment rate-low and long-term ultimate risk-free reinvestment rate-low), and similarly for ultimate risk-free reinvestment rate-median and ultimate risk-free reinvestment rate-high.

.13 The parameters in the base and prescribed scenarios, including maximum net credit spreads, apply to investments denominated in Canadian dollars. For the base and each prescribed scenario, the actuary would determine the corresponding parameters for investments denominated in a foreign currency from the historical relationship between investments denominated in that currency and investments denominated in the Canadian dollar if the expected continuance of that relationship so permits. Otherwise the actuary would devise independent scenarios for investments denominated in that currency.

Base scenario

.14 In the base scenario,

- Risk-free interest rates effective after the calculation date would be equal to the forward interest rates implied by the equilibrium risk-free market curve at that date, for the first 20 years after the calculation date;
- At and after the 60th anniversary from the calculation date, risk-free interest rates would be equal to the ultimate risk-free reinvestment rate-median;
- At the 40th anniversary from the calculation date, the risk-free interest rates would be equal to 30% of the rates at the 20th anniversary plus 70% of the rates at the 60th anniversary;
- Between the 20th and 40th and between the 40th and 60th anniversaries, the risk-free interest rates would be determined using a uniform transition; and
- Credit spreads at all durations would be the best estimate described in paragraph 2340.12.

.15 The provision for adverse deviations for interest rate risk for both deterministic and stochastic applications would be measured as the difference between the reported insurance contract liabilities and the insurance contract liabilities resulting from the application of the base scenario.

Prescribed scenarios

.16 Because future investment returns and inflation rates are so conjectural, it is desirable that the calculation of insurance contract liabilities for all insurers takes account of certain common assumptions. There are, therefore, eight prescribed scenarios as presented below.

.17 The prescribed scenarios apply to fixed-income assets purchased or sold after the calculation date.

.18 For a prescribed scenario, if the net cash flow forecast for a period is positive, then the actuary would assume its application to repay the outstanding balance, if any, of borrowing in accordance with paragraph 2330.19.

.19 For a prescribed scenario, if the net cash flow for a period is negative, then the actuary would assume an offsetting disinvestment or borrowing, or a mix of the two. For insurer-controlled investment decisions, any borrowing would be in accordance with the investment policy, would be short-term, and would be expected to be repayable soon by subsequent positive forecasted net cash flow.

Prescribed scenario 1

.20 The risk-free interest rates for investments purchased or sold

- At the calculation date are those available in the market;
- At the 40th anniversary from the calculation date and beyond, the risk-free interest rates are equal to ultimate risk-free reinvestment rate-low;
- At the 1st anniversary from the calculation date, the risk-free interest rates are equal to 90% of the risk-free interest rates at the calculation date;
- At the 20th anniversary of the calculation date, the risk-free interest rates are equal to 10% of the risk-free interest rates at the calculation date plus 90% of ultimate risk-free reinvestment rate-low; and
- Between each of the calculation date and the 1st, 20th, and 40th anniversaries, the risk-free interest rates are determined using a uniform transition.

Prescribed scenario 2

.21 This scenario is the same as prescribed scenario 1, with the ultimate risk-free reinvestment rate-low replaced by the ultimate risk-free reinvestment rate-high, and the 90% multiplier applicable on the 1st anniversary replaced by 110%.

Prescribed scenario 3

.22 The oscillation period for use in prescribed scenarios 3 to 6 is 20 years.

.23 The long-term risk-free interest rate moves cyclically between long-term ultimate risk-free reinvestment rate-low and long-term ultimate risk-free reinvestment rate-high as follows:

- Over the first quarter oscillation period, the long-term risk-free interest rate moves uniformly from the long-term interest rate at the calculation date to 75% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-low);
- Over the next quarter oscillation period, the long-term risk-free interest rate moves uniformly from 75% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-low) to long-term ultimate risk-free reinvestment rate-low;
- Over the next half oscillation period, the long-term risk-free interest rate moves uniformly from the long-term ultimate risk-free reinvestment rate-low to the long-term ultimate risk-free reinvestment rate high; and
- This cycle is repeated for the remaining oscillation periods.

.24 The short-term risk-free interest rate moves as follows:

- Over the first quarter oscillation period, the short-term risk-free interest rate moves uniformly from the short-term interest rate at the calculation date to 50% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-low);
- Over the next quarter oscillation period, the short-term risk-free interest rate moves uniformly from 50% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-low) to 60% of the corresponding long-term interest rate; and
- Thereafter remains at 60% of the corresponding long-term interest rate.

.25 Other interest rates are determined using yield rates that are appropriate for the terms of those assets, in accordance with the historic relationship between the rates of those assets and the short- and long-term interest rates.

Prescribed scenario 4

.26 This scenario is similar to prescribed scenario 3, but with the peaks of prescribed scenario 3 coinciding with the troughs of prescribed scenario 4. Over the first quarter oscillation period, the long-term risk-free interest rate moves uniformly from the long-term risk-free interest rate at the calculation date to 125% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-high). Over the next quarter oscillation period, the long-term risk-free interest rate moves uniformly from 125% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-high) to long-term ultimate risk-free reinvestment rate-high. Over the next half oscillation period, the long-term risk-free interest rate moves uniformly from the long-term ultimate risk-free reinvestment rate-high to the long-term ultimate risk-free reinvestment rate-low, and this cycle is repeated for the remaining oscillation periods.

.27 The short-term risk-free interest rate moves as follows:

- Over the first quarter oscillation period, the short-term risk-free interest rate moves uniformly from the short-term interest rate at the calculation date to 150% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-high);
- Over the next quarter oscillation period, the short-term risk-free interest rate moves uniformly from 150% of (80% of the risk-free interest rates at the calculation date plus 20% of ultimate risk-free reinvestment rate-high) to 60% of the corresponding long-term interest rate; and
- Thereafter remains at 60% of the corresponding long-term interest rate.

Prescribed scenario 5

.28 This scenario is the same as prescribed scenario 3, except that the short-term risk-free interest rate at an anniversary of the calculation date is a percentage of the corresponding long-term risk-free interest rate. That percentage moves cyclically in 20% annual steps from 40% to 120% and back. The first cycle is irregular:

- Over the first quarter oscillation period, the short-term risk-free interest rate moves uniformly from the short-term interest rate at the calculation date to 40% of the corresponding long-term interest rate.
- Thereafter the short-term risk-free interest rate moves cyclically in 20% annual steps from 40% to 120% and back.

Prescribed scenario 6

.29 As respects long-term risk-free interest rate, this scenario is the same as prescribed scenario 4.

.30 As respects short-term risk-free interest rate, this scenario is the same as prescribed scenario 5, except that, over the first quarter oscillation period, the short-term risk-free interest rate moves uniformly from the short-term interest rate at the calculation date to 120% of the corresponding long-term interest rate. Thereafter the short-term risk-free interest rate moves cyclically in 20% annual steps from 120% to 40% and back.

Prescribed scenario 7

.31 The risk-free interest rates for investments purchased or sold

- At the calculation date are those available in the market;
- At the 60th anniversary from the calculation date and beyond, are equal to 80% of the ultimate risk-free reinvestment rate-median;
- At the 1st anniversary from the calculation date, are equal to 80% of the risk-free interest rates at the calculation date;
- At the 20th anniversary from the calculation date, are equal to 80% of (30% of the risk-free interest rates at the calculation date plus 70% of ultimate risk-free reinvestment rate-median);
- At the 40th anniversary from the calculation date, are equal to 80% of (10% of the risk-free interest rates at the calculation date plus 90% of ultimate risk-free reinvestment rate-median); and
- Between each of the calculation date and the 1st, 20th, 40th, and 60th anniversaries, are determined using a uniform transition.

Prescribed scenario 8

.32 This scenario is the same as prescribed scenario 7, with the 80% replaced by 120%.

Other scenarios

.33 In addition to the prescribed scenarios, which would be common to the calculation of insurance contract liabilities for all insurers, the actuary would also select other scenarios that would be appropriate to the circumstances affecting the work. The reasonableness of degrees of change of interest rates would be largely dependent on the period of time being considered. Other plausible scenarios would include parallel shifts up and down as well as flattening and steepening of the yield curve.

.34 The number of other interest rate scenarios would be relatively large to the extent that

- The pattern of forecasted net cash flow in the base scenario is such that the classification of scenarios between favourable and unfavourable is unclear;
- Forecasted net cash flow is sensitive to the selection of interest rate scenarios;
- The range of present values of forecasted net cash flow is wide, suggesting exposure to mismatch risk;
- Investment policy does not control mismatch risk;
- Asset-liability management policy allows a wide range of practice; or
- Flexibility to manage assets or liabilities is limited.

2340 Other assumptions: Economic

Margin for adverse deviations

.01 To set the level of the margin for adverse deviations as specified in paragraph 2320.54, significant considerations indicating difficulties in properly estimating the best estimate assumption would include

- There is little relevant experience;
- Future experience is difficult to estimate;
- Operational risks adversely affect the likelihood of obtaining the best estimate assumption;
- Asset underwriting criteria are weak or poorly controlled;
- There are liquidity concerns;
- There is uncertainty regarding the credit enhancement techniques used;
- The trust structure and legal responsibilities of the different parties for a securitized asset are not clearly understood in a practical and/or legal sense;
- The asset held is from a non-pass-through structure with a repackaging of the credit risk that is difficult to understand;
- The asset held is from a lower-quality tranche from a structure that is not a pass-through structure that repackages credit risks;
- There is uncertainty about the counterparty credit; or
- There is no netting of the aggregate exposure with a counterparty.

.02 Significant considerations indicative of a potential deterioration of the best estimate assumption would include situations where operational risks are present such that the likelihood of continuing to obtain the best estimate assumption is adversely impacted.

Fixed income assets: investment return

.03 The forecast of cash flows from a fixed income asset would be the promised cash flows over the term of the asset, modified for asset depreciation and borrower and issuer options.

Fixed income assets: asset depreciation

.04 The actuary's best estimate of asset depreciation would depend on

- Asset type, credit rating, liquidity, term, and duration since issue;
- Subordination to other debt of borrower or issuer;
- The insurer's credit underwriting standards, diversification within a particular type of investment, to the extent that it is indicative of the future, and the insurer's own experience;
- The insurance industry's experience;
- Guarantees that offset depreciation, such as that in an insured mortgage; and
- Potential for anti-selection by borrowers and issuers.

.05 Asset depreciation comprises that of both assets that are impaired at the calculation date and assets that become impaired after the calculation date, and includes loss of interest, loss of principal, and expense of managing depreciation.

.06 Asset depreciation is likely to be relatively high after the forced renewal of a mortgage loan; i.e., one where the mortgagor can neither pay, nor find an alternative mortgagee for the balance outstanding at the end of its term but is able to continue its amortization. The explicit forecasting of subsequent cash flow is usually so conjectural that to commute the cost of that asset depreciation to the end of the term of the mortgage would be an acceptable approximation unless it undermines the interest rate assumption in the scenario.

.07 The actuary would not necessarily assume that the best estimate of asset depreciation is less than the asset's credit spread.

.08 The low and high margins for adverse deviations for a scenario would be respectively 25% and 100% of the best estimate for that scenario, except that

- A higher range would be appropriate where those percentages of an unusually low best estimate are not meaningful; and
- Zero would usually be appropriate for an Organisation for Economic Cooperation and Development (OECD) government's debt denominated in its own currency.

Fixed income assets: exercise of borrower and issuer options

.09 Examples of borrower and issuer options are the option to prepay a mortgage loan, to extend the term of a loan, and to call a bond.

.10 The assumed exercise of an option may depend on the interest rates in the scenario. Anti-selection by commercial borrowers and issuers would usually occur systematically.

.11 Forecasted cash flows would include any penalty generated by exercise of an option.

Fixed income assets: credit spreads

.12 The best estimate of credit spreads

- Would be the credit spreads observable in the market at the calculation date;
- At and after the 5th anniversary from the calculation date, would be based on long-term historical average credit spreads corresponding to assets by type, credit rating, and term; and
- Between the calculation date and the 5th anniversary, would be determined using a uniform transition.

.13 When choosing the best estimate of credit spreads based on long-term historical averages, the actuary would consider

- Using as long a period of history as practicable; and
- Adjusting the assumptions to reduce any inconsistencies that may arise from using different historical periods or sources of information for different asset types, credit ratings, or terms.

.14 The margin for adverse deviations in credit spreads would be

- Zero at the calculation date;
- An addition or subtraction, as appropriate in aggregate, of 10% of the best estimate assumptions at and after the 5th anniversary from the calculation date; and
- Between the calculation date and the 5th anniversary, the margin for adverse deviations as percentage of the best estimate would be determined using a uniform transition.

Non-fixed income assets: investment return

.15 Where reliable historical data are available, the actuary would choose the best estimate of investment return on a non-fixed income asset (such as common shares, real estate and other non-fixed income portfolios) such that it would not be more favourable than a benchmark based on historical performance of assets of its class and characteristics.

.16 Where the best estimate for a class of non-fixed income assets is based on reliable historical data, the margin for adverse deviations in the assumption of non-fixed income capital gains would be 20% of the best estimate plus an assumption that those assets change in value at the time when the change is most adverse. That time would be determined by testing, but usually would be the time when their book value is largest. The assumed change as a percentage of market value

- Of a diversified portfolio of North American common shares would be 30%; and
- Of any other portfolio would be in the range of 20% to 50% depending on the volatility relative to a diversified portfolio of North American common shares.

.17 Where the best estimate for a class of non-fixed income assets is based on reliable historical data, the low and high margins for adverse deviations in the assumptions of income on the class (for example, common share dividends and real estate rental income) would be respectively 5% and 20%. Furthermore, if the ratio of income (other than that fixed by agreement) to asset value increases following the assumed change in asset value described in paragraph 2340.16, the margin for adverse deviations in the assumption for income would be adjusted so the ratio five years after the assumed change in asset value is not higher than the ratio immediately before the assumed change in asset value.

.18 Where reliable historical information is not available for a non-fixed income class of assets, the actuary would select a best estimate investment return assumption and margins for adverse deviations such that the assumed return in excess of risk-free interest rates, net of margins, would not exceed the assumed return in excess of risk-free interest rates, net of margins, for a similar asset class for which reliable historical information is available in the same jurisdiction, or in Canada if there is no relevant reliable historical information in the same jurisdiction.

.19 Whether the assumed change is a gain or loss would depend on its effect on benefits to policy owners. A capital loss may reduce insurance contract liabilities as a result of that effect.

.20 If non-fixed income assets are used to support liability cash flows that are not substantially linked to returns on non-fixed income assets, the actuary would include an additional provision for adverse deviations by modifying the assumed investment strategy in the scenario adopted, if needed, so that the amount of non-fixed income assets supporting such liability cash flows at the calculation date and at each duration in the projection does not exceed the amount required to support 20% of cash outflows for the first 20 years and 75% thereafter, where cash outflows are the greater of the annual liability cash flows and zero in each forecast period. The actuary would not consider this additional provision when selecting the scenario used to establish the insurance contract liabilities. This modification of the assumed investment strategy would be applied at each duration independently.

Taxation

.21 The best estimate would be for continuation of the tax regime at the calculation date, except that the best estimate would anticipate a definitive or virtually definitive decision to change that regime. The margin for adverse deviations would be zero.

Foreign exchange

.22 The needed assumptions would include foreign exchange rates when insurance contract liabilities and their supporting assets are denominated in different currencies.

.23 The base scenario used to develop the assumption for foreign exchange rates would be based on currency forwards. If currency forwards are not available, the forward exchange rates would be derived based on risk-free interest rate differentials where available. If neither is available, the actuary would use his or her best judgment to develop an appropriate approach.

.24 A provision for adverse deviations would be developed from a scenario using adverse movements in the exchange rate. Such movements would reflect the historical volatility in the exchange rate over the applicable period. The provision for adverse deviations would be the excess of the insurance contract liabilities based on this adverse scenario over the insurance contract liabilities calculated using the base scenario.

.25 A minimum provision for adverse deviations would apply. This would be the excess of the insurance contract liabilities resulting from the application of an adverse 5% margin to the projected exchange rates underlying the base scenario over the insurance contract liabilities calculated using the base scenario.

2350 Other assumptions: non-economic

Margin for adverse deviations

.01 The actuary would select a margin for adverse deviations between a low margin and a high margin

- Specified for each best estimate assumption discussed below; and
- Of 5% and 20% (or –5% and –20%), respectively, of each other best estimate assumption.

.02 If a margin for adverse deviations cannot be defined as a percentage of the best estimate assumption, then the related provision for adverse deviations would be taken as the increase in insurance contract liabilities that results from substitution of a conservative assumption for the best estimate assumption.

.03 Significant considerations indicating difficulties in properly estimating the best estimate assumption would include

- The credibility of the company's experience is too low to be the primary source of data;
- Future experience is difficult to estimate;
- The cohort of risks lacks homogeneity;
- Operational risks adversely impact the likelihood of obtaining best estimate assumption; or
- The derivation of the best estimate assumption is unrefined.

.04 Significant considerations indicative of a potential deterioration of the best estimate assumption would include

- A significant concentration of risks and/or lack of diversification;
- Operational risks that adversely affect the likelihood of continuing experience which is consistent with the best estimate assumption; or
- Past experience that may not be representative of future experience and the experience may deteriorate.

Other significant considerations may exist, but are tied to specific assumptions. Where applicable, they are described below.

.05 A selection above the high margin would be appropriate, however, for unusually high uncertainty or if the resulting provision for adverse deviations is unreasonably low because the margin is expressed as a percentage and the best estimate is unusually low.

Insured life mortality

.06 The actuary's best estimate of insured life mortality would depend on

- The life insured's age, sex, smoking habit, health, and lifestyle;
- Duration since issue of the policy;
- Plan of insurance and its benefits provided;
- The insurer's underwriting practice (that of its reinsurer for facultative reinsurance), including, if applicable to the policy, the absence of underwriting or less stringent underwriting for a group of simultaneously sold policies;
- The size of the policy; and
- The insurer's distribution system and other marketing practice;

and would include the effect of any anti-selection.

.07 The actuary would consider the inclusion of mortality improvement (a secular trend toward lower mortality rates) in the best estimate assumption and associated margin. The margin for adverse deviations related to the mortality improvement assumption is not restricted to the range of 5% to 20% noted in paragraph 2350.01.

.08 If the inclusion of mortality improvement reduces the insurance contract liabilities, then the resulting reduction would be no greater than that developed using prescribed mortality improvement rates as promulgated from time to time by the Actuarial Standards Board. If, at an appropriate level of aggregation, the inclusion of mortality improvement increases the insurance contract liabilities, then the actuary's assumption would include such improvement. The resulting increase in insurance contract liabilities would be at least as great as that developed using prescribed mortality improvement rates as promulgated from time to time by the Actuarial Standards Board.

.09 The low and high margins for adverse deviations for the mortality rates per 1,000 would be respectively an addition or subtraction, as appropriate, of 3.75 and 15, each divided by the curtate expectation of life at the life insured's projected attained age. These margins for adverse deviations are applied after mortality improvement.

Annuitant mortality

.10 The actuary's best estimate assumption of annuitant mortality would depend on

- The annuitant's age, sex, smoking habit, health, and lifestyle;
- Size of premium;
- Plan of annuity and its benefits provided; and
- Whether registered or not, whether structured settlement, and whether group or individual contract;

and would include the effect of any anti-selection resulting from the annuitant's option to select the timing, form, or amount of annuity payment, or to commute annuity payments.

.11 The insurance underwriting in a "back-to-back" insurance/annuity package may unfavourably affect the best estimate.

.12 The mortality improvement assumption would include a best estimate assumption and an associated margin. The margin for adverse deviations related to the mortality improvement assumption is not restricted to the range of 5% to 20% noted in paragraph 2350.01. The actuary's assumption would include mortality improvement, the effect of which is to increase insurance contract liabilities, such that the resulting increase would be at least as great as that developed using prescribed mortality improvement rates as promulgated from time to time by the Actuarial Standards Board.

.13 The low and high margins for adverse deviations for the mortality rates would be respectively a subtraction of 2% and 8% of the best estimate.

.14 An additional significant consideration for the determination of the level of margin for adverse deviations would be the possibility of commuting survival dependent benefits after periodic payments have started.

Morbidity

.15 The actuary's best estimate of insured life morbidity would depend on

- The life insured's age, sex, smoking habit, occupation, industry, health, and lifestyle;
- Duration since issue of the policy;
- In the case of income replacement insurance, definition of disability, unemployment levels, and, in the case of an outstanding claim, cause of disability;
- Plan of insurance and its benefits provided, including elimination period, guarantees, deductibles, coinsurance, return-of-premium benefits, and benefit limits, indexation, and offsets;
- The insurer's underwriting practice (that of its reinsurer for facultative reinsurance), including, if applicable to the policy, the absence of underwriting or less stringent underwriting for a group of simultaneously sold policies;
- The insurer's administration and claim adjudication practice;
- The size of the policy;
- Seasonal variations;
- In the case of group insurance, participation level; and
- Environmental factors, such as a change in the offset to government benefits;

and would include the effect of any anti-selection.

.16 If the actuary selects a higher than usual best estimate of disability incidence because of an outlook for a high level of unemployment, he or she would not necessarily select a concomitant higher than usual best estimate of disability termination.

.17 The low and high margins for adverse deviations would be, respectively, an addition of 5% and 20% of the best estimate of morbidity incidence rates, and a subtraction of 5% to 20% of the best estimate morbidity termination rates. The actuary's selection would reflect any expected correlation between incidence and termination rates.

.18 Additional significant considerations to be taken into account when determining the level of margin for adverse deviations would include

- Contract wording is not tight enough to protect against medical advances;
- Definitions of claim events are not precise and/or not protecting against potential anti-selection; or
- Interpretation of claim event definitions by the court uncertain.

Withdrawal and partial withdrawal

.19 The actuary's best estimate of withdrawal rates would depend on

- Policy plan and options;
- The life insured's attained age;
- Duration since issue of the policy;
- Method of payment and frequency of premiums;
- Premium paying status;
- Policy size;
- The policy's competitiveness, surrender charges, persistency bonuses, taxation upon withdrawal, and other incentives and disincentives to withdrawal;
- Policy owner and sales representative sophistication;
- The insurer's distribution system and its commission, conversion, replacement, and other marketing practices; and
- The interest rate scenario;

and would include the effect of any anti-selection.

.20 The insurer's withdrawal experience would be pertinent and usually credible. It would not be available for new products and for higher durations on recent products, which is a problem for the actuary if the insurance contract liabilities are sensitive to withdrawal rates.

.21 The automatic payment of insurance premiums by the annuity benefit in a "back-to-back" insurance/annuity package would be a disincentive to withdrawal.

.22 Reinsurance assumed withdrawal rates would depend on practice in the direct insurer.

.23 A "cliff" is a sudden significant increase in the benefit available at withdrawal. That increase may result from increase in cash value, decrease in surrender charge, or availability of a maturity benefit or persistency bonus. Unless there is pertinent persistency experience data to the contrary, the actuary's best estimate withdrawal rates would grade to zero as the cliff approaches and remain at zero for an interval before the cliff is reached. The same would apply to a return of premium benefit in life insurance and to one in accident and sickness insurance, with modification in the latter case if the benefit is contingent upon zero claims or reduced by the amount of claims.

.24 The actuary's best estimate withdrawal rate would be zero for a paid-up policy without non-forfeiture benefit.

.25 The low and high margins for adverse deviations would be, respectively, an addition or subtraction, as appropriate, of 5% and 20% of the best estimate withdrawal rates. In order to ensure that the margin for adverse deviations increases insurance contract liabilities, the choice between addition and subtraction may need to vary by interest scenario, age, policy duration, and other parameters. In the case of partial withdrawal, two assumptions would be needed, the amount withdrawn and the partial withdrawal rate.

.26 Additional significant considerations to be taken into account when determining the level of margin for adverse deviations in situations where a decrease in lapse rates increases the insurance contract liabilities would include

- Remuneration policy encouraging persistency; or
- Cancellation of a contract being clearly detrimental to the policy owner.

.27 Additional significant considerations to be taken into account when determining the level of margin for adverse deviations in situations where an increase in lapse rates increases the insurance contract liabilities would include

- Remuneration policy encourages terminations;
- Cancellation of a contract would be clearly beneficial to the policy owner;
- Company's contracts have provisions where rating decreases may trigger additional withdrawals; or
- There is no market value adjustment on withdrawals for deposits and deferred annuities.

Anti-selective lapse

.28 Strictly speaking, "lapse" means termination of a policy with forfeiture, but in the context of anti-selection has come to include any termination or the election of the extended term insurance non-forfeiture option. "Anti-selective lapse" is a tendency of policies on healthy insured lives to lapse or unhealthy insured lives not to lapse, with a concomitant deterioration in the insurer's mortality or morbidity experience. To determine whether the tendency has operated in a particular case would require either a re-underwriting of those who have lapsed and those who have not, or a study of the mortality among those who lapsed, neither of which is likely to be practical. Policy owners will, however, make decisions in their own perceived interest, so that anti-selective lapse is plausible whenever that perceived interest is for policies on unhealthy lives not to lapse or for policies on healthy lives to lapse.

.29 It is difficult to estimate with confidence the intensity of anti-selective lapse. It is plausible for the intensity to be proportional to the intensity of policy owner perceived interest. However, anti-selective lapse is merely a tendency provoked by the policy owner's perceived interest. The policy owner may not know the true state of health of the life insured. The policy owner may imprudently favour, or be obliged by financial pressure to adopt, a short-term interest with long-term detriment; thus, a policy on an unhealthy life may lapse when the premium increases, the policy owner perceiving the policy to be no longer affordable. Through ignorance or inertia, a policy on a healthy life may be continued by a policy owner, even though it could be replaced by a superior one. Moreover, anti-selective lapse is not the unvarying effect of a decision in the policy owner's perceived interest. For instance, a policy owner may lapse a policy on an unhealthy life, if the policy is no longer needed, or the policy on a healthy life may remain in force if the policy owner perceives a continuing need. Without pertinent and reliable experience, however, the actuary would not assume that the non-lapsation of policies on healthy lives favourably affects the mortality best estimate for the persisting insurance contracts.

.30 The premise to the actuary's assumptions would be that policy owners' decisions

- Will tend to serve their perceived interest; and
- Will not serve the insurer's interest unless the two run together.

.31 Examples where the perceived interest of the policy owners of policies with healthy life insureds may be to lapse include

- Premium increase at renewal of term insurance;
- Unfavourable underwriting decision at renewal of re-entry term insurance;
- Benefit decrease or premium increase of adjustable insurance;
- Premium needed to avoid termination of universal life insurance with exhausted funding;
- Reduction in policy dividend scale;
- Offer or availability of a superior replacement policy, such as by the creation of preferred underwriting class;
- Significant but temporary increase (spike) in non-forfeiture value; and
- Downgrade in the insurer's credit rating.

Expense

.32 The actuary would select a best estimate assumption that provides for the expense of the relevant policies and their supporting assets, including overhead. The insurer's other expense is irrelevant to the valuation of insurance contract liabilities. Other expense would include

- Expense related to policies that, for the relevant policies, was incurred before the calculation date, such as marketing and other acquisition expense; and
- Expense not related to the relevant policies and their supporting assets, such as investment expense for the assets that support capital.

.33 The assumption would provide for future expense inflation consistent with that in the interest rate scenario.

.34 A stable insurer's expense experience is pertinent if its expense allocation is appropriate for valuation of insurance contract liabilities (or if the actuary can correct the inappropriateness, e.g., by reallocating corporate expense to operating lines of business).

.35 A particular insurer may have an expectation of reduced expense rates, but the actuary would anticipate only a reduction that is forecasted with confidence.

.36 Investment expense comprises

- Administration expense, both internal and external;
- Expense related to investment income, such as deferred fees and commissions and direct taxes; and
- Interest on money borrowed to finance investment.

.37 The insurer incurs neither cash rental expense nor cash rental income on real estate that it owns and occupies. The actuary would deem such expense and, if the real estate supports the insurance contract liabilities, such income at a reasonable rate in the selection of an assumption of expense and investment return.

.38 Certain taxes are akin to expenses. The actuary would make similar provision for them in the insurance contract liabilities to the extent that they relate to the relevant insurance contracts and their supporting assets. They include both premium taxes, which are straightforward, and taxes whose basis is neither income nor net income but which may be complicated by a relationship with income tax; for example, those currently incurred may be offset against later income tax.

.39 The low and high margins for adverse deviations would be respectively 2.5% and 10% of best estimate expense including inflation thereof. No margin for adverse deviations is needed for a tax, such as premium tax, whose history has been stable.

.40 Additional significant considerations to be taken into account when determining the level of margin for adverse deviations would include

- Distribution of general expenses by line of business, by product, or by issue and administrative expenses is not based on a recent internal expense study;
- Allocation is not an appropriate basis for the best estimate expense assumption;
- Expense study does not adequately reflect the appropriate expense drivers; or
- Future reductions in unit expenses (before inflation) are assumed.

Policy owner options

.41 Examples of policy owner options are options to

- Purchase additional insurance;
- Convert term to permanent insurance;
- Select the extended term insurance non-forfeiture option;
- Make partial withdrawal from a universal life insurance policy;
- Select the amount of premium for a flexible premium policy; and
- Purchase an annuity at a guaranteed rate.

.42 The actuary would select a best estimate assumption of policy owner exercise of both contractual options and extra-contractual options of which they have reasonable expectations.

.43 The actuary's best estimate would depend on

- Life insured's attained age;
- Duration since issue of the policy;
- Plan of insurance and its benefits provided;
- Historical premium payment patterns;
- Method of premium payment;
- Sophistication of the policy owner and the intermediary;
- Perceived self-interest of the policy owner and the intermediary;
- Policy's competitiveness; and
- Insurer's distribution system and other marketing practice;

and would make provision for anti-selection.

.44 The actuary would make provision for adverse deviations by testing the effect on insurance contract liabilities of plausible alternative assumptions of policy owner exercise of options and adopting one with relatively high insurance contract liabilities.

Related assumptions

.45 The actuary would consider how the assumptions may be interrelated in determining the best estimate assumptions and appropriate margins. In determining these interrelationships the actuary would take account of potential anti-selection. For example, the actuary would consider what the relationships among term conversions, withdrawals, and mortality might be as a contract nears the end of a term renewal period.

Other examples of how potential anti-selection might affect the selection of assumptions are provided above and in subsection 1620.

2360 Valuation of segregated fund insurance contract liabilities

.01 This subsection addresses considerations applicable to the valuation of insurance contract liabilities related to guarantees provided under the terms of segregated fund contracts. While the requirements of subsections 2310 to 2350 apply generally to all life and health insurance contracts including segregated fund contracts, the nature of the insurance guarantees and other provisions of segregated fund contracts are such that this additional subsection is warranted to supplement, and to clarify the application of, the preceding requirements to such contracts.

Method

.02 The actuary should calculate insurance contract liabilities for the guaranteed benefits of segregated fund contracts by the Canadian asset liability method using stochastic modelling. [Effective April 15, 2017]

.03 If the bifurcated approach is used, the allocation of future fee revenue between recoverability testing of the allowance for acquisition expense and providing for the cost of guarantees should not change from period to period. [Effective April 15, 2017]

.04 A factor-based approach, approved by a regulator, would be considered an appropriate approximation and the actuary would not need to undertake testing to determine the appropriateness of this approximation.

.05 Either of two approaches would be appropriate to value segregated fund policies where guaranteed benefits are involved and an allowance for acquisition expense is being amortized.

- For the bifurcated approach, forecast fee revenue is allocated between recoverability testing of the allowance for acquisition expense and providing for the cost of the guarantees. Where the actuary can reasonably determine an additional charge priced into the contract to cover the cost of guarantees, the portion of revenue allocated to the guarantees would reflect such additional charge, with the remainder of revenue applied to test the recoverability of the unamortized allowance for acquisition expense. The insurance contract liability for the guarantees is calculated separately using the net cash flows allocated to the guarantees while the recoverability of the allowance for acquisition expense is tested excluding those revenues allocated to the guarantees.
- For the whole contract approach, all general account net cash flows associated with segregated funds are considered in calculating the total liability, i.e., the liability for guaranteed benefits less the balance of unamortized acquisition expense. This total liability will change over the reporting period as a result of market movements and other factors and, therefore, may need to be adjusted to remove any write-up to the balance of the allowance for acquisition expense.

.06 Under the bifurcation approach, the requirement to use the Canadian asset liability method applies to the calculation of the liability related to guaranteed benefits and to recoverability testing of the unamortized balance of the allowance for acquisition expenses; whereas under the whole contract approach, the Canadian asset liability method would be used to calculate the total liability. In either case, the balance of the allowance for acquisition expense would be written down to zero using an appropriate method. Such method would

- Have a term consistent with the extended term established at inception;
- Have a write-down pattern reasonably matched with the net cash flow available to offset these expenses at inception; and
- Be locked in, so that the amount of write-down in each period will not fluctuate from the expected amount established at inception provided such balance is recoverable from the additional cash flow recognized at the calculation date, and where not fully recoverable at the calculation date, is written down to the recoverable amount, with the expected amount of write-down in each future period proportionately reduced.

Term of the liability

.07 While the provisions of subsection 2320 concerning the term of the liability apply generally to segregated fund contracts, an exception to paragraph 2320.21 would apply to segregated fund contracts that contain material constraints. In this situation, the term of the liability would end at the date after the calculation date which maximizes the insurance contract liabilities, consistent with the treatment for contracts with no material constraints.

.08 The actuary would extend the term of the liability as determined under subsection 2320

- To permit reflection of hedging arrangements related to segregated fund guarantees by considering both the value of the liability and its associated hedge, where the resulting statement of financial position presentation is consistent with market movements over the reporting period; and
- Where such extension would be subject to constraints on the amount of net cash flow capitalized, consistent with an unhedged position.

Assumptions – non-economic

.09 In addition to considerations discussed in subsection 2350, the following considerations apply to the valuation of liabilities for segregated fund guarantees and recoverability testing of the allowance for acquisition expense.

.10 The actuary's best estimate of withdrawal rates would depend on

- Extent to which the guaranteed values are greater or less than the market value of the funds;
- Time to maturity;
- Systematic withdrawal consistent with the contractual terms of the policies;
- Market conditions; and
- Distribution of investment income from the funds if such amounts are not automatically reinvested.

.11 The actuary would select a best estimate assumption for management expense ratios (including all taxes charged to the fund such as GST) that varies by fund according to the terms of the contract and recent practice of the insurer. The actuary would not assume a change in management expense ratios in the future unless there is a clear and justifiable reason for doing so, taking into account past practices, competitive pressures, and reasonable policy owner reactions.

Policy owner options

.12 The actuary would assume the contract terminates on maturity unless allowing a proportion of the policy owners to roll their contracts over would increase the insurance contract liabilities. The proportion of policy owners that elect to roll their policies over would take into account the experience of the insurer. The actuary would test future maturity dates that the policy owner may elect and would use caution in setting this maturity date assumption.

.13 The actuary would test the effect of fund transfers and shifting asset mix and would exercise caution in assuming that the status quo would be maintained indefinitely.

.14 The actuary would test the effect of future optional deposits to the extent they can reasonably be anticipated and use caution in assuming that the status quo would be maintained indefinitely.

.15 The actuary's best estimate of rates at which ratchet and reset options are exercised by policy owners would depend on the

- Extent to which the guaranteed values are greater than the market value of the funds;
- Relationship of the fund value and guaranteed benefit amounts;
- Term to maturity; and
- Growth of funds.

.16 If resets are discretionary, the actuary would assume that some proportion of policy owners would elect to exercise the reset option when it is in their financial best interest to do so. The actuary need not assume that all policy owners would act with absolute efficiency in an economically rational manner. However, the assumptions would allow the frequency of elective resets to vary according to the current and/or historical economic environment.

.17 The actuary would consider the extent to which an increase in partial withdrawals on segregated funds might lead to deferrals in benefit commencement dates.

2370 Stochastic scenarios

.01 Where the actuary uses stochastic modelling techniques to reflect assumptions for interest rates and/or investment returns, the development of scenarios should consider

- Selection of market indices and proxies;
- Development of economic scenario generators and model parameters; and
- Calibration of risk-free interest rates and investment returns (i.e., equity returns, bond fund returns and money market returns). [Effective April 15, 2017]

.02 Where investment returns are stochastically modelled, the calibration of stochastic models used in the valuation should meet the criteria for investment returns as promulgated from time to time by the Actuarial Standards Board. [Effective April 15, 2017]

.03 Where the interest rate scenarios selected are stochastically modelled, the actuary's calibration of stochastic models should meet the criteria for risk-free interest rates as promulgated from time to time by the Actuarial Standards Board. [Effective April 15, 2017].

.04 Where valuation is performed using stochastic scenarios, the actuary would assign a value to the insurance contract liabilities which is within the range defined by

- The average of those values that are above the 60th percentile of the range of liability values produced by the entire set of modelled scenarios; and
- The corresponding average for the 80th percentile.

.05 Each average value referred to above is referred to as a conditional tail expectation and the specific average values described above can for simplicity be denoted by CTE[60] and CTE[80] respectively.

.06 With respect to interest rate scenarios, the actuary would adopt a scenario where the insurance contract liabilities are higher than the midpoint of the range CTE[60] to CTE[80] whenever current long-term risk-free interest rates are near the limits or outside the range of long-term ultimate risk-free reinvestment rate-low to long-term ultimate risk-free reinvestment rate-high or whenever any of the considerations in paragraph 2330.34 exist.

Random number generators

.07 The random numbers generated by computer algorithms are called pseudorandom because they are not truly random. Knowing the algorithm and the seed to the sequence is sufficient to predict the next random number that will be generated. A sound pseudorandom number generator provides a sequence that is statistically indistinguishable from a truly random sequence from the given distribution. The actuary would test the random number generator to demonstrate that it provides a sequence that is statistically indistinguishable from a truly random sequence for the given distribution.

.08 It would be preferable for the results from stochastic modelling to be reproducible, so that a repeatable pseudorandom number generator would be available to an auditor.

Number of scenarios

.09 The actuary would test that the number of scenarios used to calculate the insurance contract liabilities provides an acceptable level of precision that meets the standard of materiality. To increase the precision of the insurance contract liability calculation, it may be necessary to increase the number of scenarios significantly.

.10 The actuary may consider scenario reduction techniques, such as stratified sampling, to reduce the number of scenarios on a sound statistical basis.

Modelling period

.11 The actuary would use a modelling period that is not longer than one month unless testing shows that the liability value is not sensitive to the frequency of election of benefits or features.

Economic scenario generators

.12 The actuary would develop stochastic models for each market index or proxy that is constructed.

.13 The actuary would select economic scenario generators for stochastic models that are robust and statistically sound.

Model parameter estimation

.14 The actuary would estimate model parameters based on historical market data as opposed to recent market performance. The historical data would cover a period at least twice as long as the projection period. However, when historical data are not available or appropriate for use, adjustments may be required.

.15 The actuary would update model parameters regularly to reflect recent changes in market conditions.

.16 When market data for foreign indices are used to estimate model parameters, the foreign exchange rate would be taken into account. The actuary may consider separate parameters for the market index and for the foreign exchange rate, for example, by including an explicit currency exchange model together with using local currency data to estimate the model parameters.

.17 Parameters would take into account appropriate correlations among investment returns for all market indices and proxies that are constructed.

Selecting investment return assumptions for specific funds

.18 To develop investment returns for a specific fund, an appropriate proxy for the fund would be constructed. The specific fund's investment policy, its asset allocation implied by the fund performance objective, its performance history, and its trading activities would be considered and reflected in the proxy asset composition. The proxy may take the form of a combination of recognized market indices or economic sector sub-indices or, less commonly, a well-defined set of trading rules in a specified asset universe. It would be appropriate for there to be a close relationship between the investment return proxy and the specific funds.

Investment returns would be generated on a gross basis, before the application of any fees or consideration of specific product features. The objective would be to model the investment returns independently of any product features. However, care would be taken to assess whether total or price returns are required for the specific funds being modelled.

Discount rates

.19 Where a discounting approach is used in conjunction with stochastic modelling as an approximation to the Canadian asset liability method, the actuary would select discount rates (or accumulation rates) to determine the asset balance necessary to support the liabilities under a given scenario using the assets allocated at the calculation date to support the liabilities and reflecting in a reasonable manner portfolio yields that would be projected given the insurer's investment policy and hedging practices.

Base scenario

.20 With respect to investment return scenarios, the base scenario for calculating the provision for adverse deviations would be defined as a notional or implicit scenario, which would result in a liability equal to the average of the insurance contract liabilities for all modelled investment return scenarios. This implicit scenario does not need to be explicitly identified or described.

2400 The Appointed Actuary

2410 Definitions

.01 In sections 2400 and 2500, "senior management" means

- In the case of a Canadian insurer, the chief executive officer, the chief financial officer, and the chief risk officer; and
- In the case of a foreign insurer, both the chief agent for Canada and the person designated by the insurer as having responsibility for its Canadian operation.

.02 In this section 2400, "directors" means an insurer's board of directors and, in the case of a foreign insurer, includes the person whom they designate as responsible for the insurer's Canadian branch.

2420 Scope

.01 Part 1000 applies to work within the scope of this section 2400.

.02 This section 2400 applies to an appointed actuary who, pursuant to

- The federal Insurance Companies Act, is the actuary of a company or society;
- The federal Insurance Companies Act, is the actuary of the Canadian branch of a foreign company; or
- A provincial Act, has the access to information, protection against civil liability, and duties in an insurer, that are substantially the same as those of the appointed actuary in the federal Act.

.03 This section 2400 also applies to an actuary who has the access to information and protection against civil liability equivalent to that which the federal Insurance Companies Act grants to an appointed actuary, even if this actuary is not an appointed actuary.

2430 Accepting and continuing an engagement

.01 Section 1300 applies rigorously to the engagement. [Effective February 1, 2018]

Qualifications, experience, and knowledge

.02 The necessary qualifications, experience, and knowledge for the engagement go beyond technical understanding and include the awareness that comes with maturity, communication with other actuaries, discussions at Institute meetings, and familiarity with conditions both internal and external to the insurer, and include communications skills.

.03 An actuary accepting an engagement for the first time may wish to arrange professional, formal, and timely access to another actuary with experience as an appointed actuary.

.04 It is important that the insurer's directors understand and accept the actuary's role and its requirements for time, resources, and access to information. The actuary may wish written confirmation of the understanding and acceptance unless the role is part of the insurer's corporate culture.

Information needed

.05 The information necessary for the work consists of the records, accounts, documents, and oral briefings which provide an understanding of the insurer's operations, its obligations, and the resources available to meet those obligations. That information includes, but is not limited to

- Files of in-force policies and outstanding claims, including their reinsurance;
- Policy provisions and other communications with policy owners;
- Past experience data;
- Past financial data;
- Communications with auditors and regulators;
- Pricing practice;
- Underwriting practice;
- Accounting practice;
- Claims settlement practice (including case estimate practice) and cost;
- Asset-liability management practice;
- Capital management practice;
- Enterprise risk management policy; and
- Own risk and solvency assessment (ORSA) report.

.06 The process to identify and assure timely receipt of that information includes

- An understanding of the insurer's decision-making;
- Continual communication with members of management who can supply information; and
- Continual communication with the auditor in accordance with the CIA/CICA *Joint Policy Statement*.

2440 Report on matters requiring rectification

.01 The appointed actuary should identify and monitor matters that may threaten the insurer's financial condition. The appointed actuary should investigate and then report, as required by law, any such matter that requires rectification to the senior management and, in the case of a Canadian insurer, send a copy of the report to the directors. Depending on the jurisdiction of the insurer, the law may also require that the report be provided to the insurer's regulator. [Effective April 15, 2017]

.02 The report may include recommendations for rectification and should specify a deadline for rectification that the actuary may later extend if appropriate. If there is no suitable rectification by that deadline or its extension, then the appointed actuary should report the matter to the insurer's regulator. [Effective April 15, 2017]

.03 The sensitivity of financial condition to adverse conditions and events varies among insurers. Financial condition and hence, the magnitude of the conditions and events that may threaten it, also varies among insurers.

.04 The frequency and intensity of the monitoring depend on the threatening conditions and events and on the circumstances of the insurer. A quarterly review would usually be a minimum.

.05 There would be no such report to senior management of an adverse condition that does not threaten the insurer's financial condition. Informal notification and consultation would usually precede, and may obviate, that report to senior management.

.06 That report would describe the threatening condition or event and the assumptions and methods in the actuary's investigation of it. It is desirable that the report includes recommendations for its rectification.

.07 The deadline would allow time, that is reasonable in the circumstances, to arrange rectification.

.08 The report to the regulator would describe the actuary's investigation, the report to senior management, and senior management's response to that report. The actuary would advise the directors of the report to the regulator.

2450 Report to the directors

.01 The appointed actuary for a Canadian insurer should report at least yearly to the directors, or to their audit committee if the directors so delegate,

- On the insurer's financial position and financial condition; and
- If required by law;
  - If the insurer has one or more participating accounts;
    - On the method of allocation of income and expenses to each such participating account;
    - On the management of the participating account(s), the dividend policy and dividend scales for the participating policy owners; and
  - If the insurer has adjustable policies in force, on the criteria established or amended by the directors for changes made by the company to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies. [Effective April 15, 2017]

.02 The appointed actuary for a foreign insurer should report at least yearly to its chief agent for Canada on its financial position and financial condition. [Effective April 15, 2017]

Allocation of income

.03 The report on allocation of income and expenses among accounts would consider the fairness and equity of such allocation to participating policy owners.

Management of the participating account(s)

.04 The report on the management of the participating account(s) would consider the fairness to participating policy owners of the policy established by the directors respecting the management of the participating account(s).

Dividend policy and dividend scale

.05 The report on the dividend policy would consider the fairness of the policy to the participating policy owners. The report on the dividend scale would consider the conformity of the dividend scale to the dividend policy and its fairness to the participating policy owners.

Adjustments of adjustable policies

.06 The report on adjustable policies would consider the fairness of the criteria for changes to adjustable policies established or amended by the directors, the fairness to adjustable policy owners of the adjustments made, and their conformity to those criteria.

Fairness opinions

.07 Where the applicable law requires that the appointed actuary opine on the fairness of the policies, criteria, or methods established by the insurer with respect to any of

- Management of the participating accounts;
- Dividend policy;
- Dividends declared;
- Policy established respecting the criteria for making adjustments to adjustable policies and the adjustments made under this policy;
- Allocation of investment income to the participating accounts; and
- Allocation of expenses to the participating accounts;

the wording of an unqualified opinion would be as follows:

> **Management of participating accounts opinion**
>
> I have reviewed the policy established by the Board of Directors with respect to the management of the participating accounts of [the Company], [including amendments made during the most recent 12 months]. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.
>
> In my opinion, the policy is fair to the participating policyholders.
>
> Mary F. Roe
> Fellow, Canadian Institute of Actuaries
> [Place of issue of opinion]
>
> [Date of opinion]

Dividend policy opinion

I have reviewed the policy established by the Board of Directors for determining the dividends [and bonuses or other benefits] of [the Company], [including amendments made during the most recent 12 months]. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the policy is fair to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]
[Date of opinion]

Dividend declaration opinion

I have reviewed the proposed dividends [and bonuses or other benefits], determined by the Board of Directors of [the company] with respect to policy years [ending between XX and YY], and have considered whether they have been determined in accordance with the policy established by the Board. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the proposed dividends [and bonuses or other benefits] are in accordance with the policy established by the Board and are fair to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

Adjustable policy changes opinion

I have reviewed the criteria established by the Board of Directors of [the company] with respect to any changes to be made to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies [including amendments made during the most recent 12 months] and the changes made pursuant to those criteria. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the criteria are fair to the adjustable policyholders, and the changes made to the adjustable policies during the most recent 12 months are in accordance with those criteria and are fair to the adjustable policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]
[Date of opinion]

Allocation of investment income to participating account(s) opinion

I have reviewed the method established by the Board of Directors for determining the portion of the investment income or losses of [the company] for the financial year ending [XX], including capital gains and losses, that is allocable to the participating account [each participating account] maintained by the company. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the method is fair and equitable to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

Allocation of expenses to participating account(s) opinion

I have reviewed the method established by the Board of Directors for determining the portion of the expenses, including taxes, of [the company] for the financial year ending [XX] that is allocable to the participating account [each participating account] maintained by the company. I conducted my review in accordance with accepted actuarial practice in Canada and pursuant to the guidance of the Superintendent of Financial Institutions.

In my opinion, the method is fair and equitable to the participating policyholders.

Mary F. Roe
Fellow, Canadian Institute of Actuaries
[Place of issue of opinion]

[Date of opinion]

.08 If the appointed actuary is unable to issue an unqualified opinion, the wording of the opinion would be adjusted to reflect the necessary qualification.

2460 Communication with the auditor

.01 Communication with the insurer's auditor would be desirable when the actuary makes a report to the insurer's senior management on a matter requiring rectification or makes an unfavourable report on the insurer's financial condition.

2470 Certification of capital filings as required by the regulator

.01 This subsection 2470 applies to the appointed actuary of a life insurer when giving an opinion on the appropriateness of regulatory capital calculations pursuant to law or on the appropriateness of internal models used to determine required capital for segregated fund guarantees pursuant to requirements of the regulator.

.02 Such certifications should contain an opinion signed by the appointed actuary. [Effective April 15, 2017]

Appropriateness of regulatory capital calculations

.03 The appointed actuary should prepare a report to support the opinion on the appropriateness of regulatory capital calculations that outlines the areas where the calculation required discretion or significant technical calculations, and the methods and judgments that were applied. The report should be completed before the provision of a signed opinion pursuant to subsection 2470. [Effective February 22, 2018]

.04 The opinion would be provided annually in support of the fiscal year-end regulatory capital filing on form(s) as directed by the regulator.

.05 In providing such an opinion, the actuary would not be opining on whether the underlying factors or specified methods to be followed are appropriate but rather on the appropriateness of any interpretation and discretionary technical calculations and methods with respect to such guidelines.

.06 Here is the standard opinion language [insert appropriate wording where indicated by square brackets].

> "I have reviewed the calculation of the Life Insurance Capital Adequacy Test ratios of [company name] as at [date]. In my opinion, the calculations of the components of the base solvency buffer, available capital, surplus allowance, and eligible deposits have been determined in accordance with the regulatory guidelines, and the components of the calculations requiring discretion were determined using method and judgement appropriate to the circumstances of the company."
>
> [Note: For application to branches "Life Insurance Capital Adequacy Test ratios" is replaced by "Life Insurance Margin Adequacy Test (LIMAT)" and "Base Solvency Buffer" is replaced by "Required Margin" and "Available Capital" is replaced by "Available Margin".]
>
> [Note: For filings for provincially regulated companies, the ratio definition, and definitions of base solvency buffer, required capital, available capital, surplus allowance, and eligible deposits, would be amended to reflect the appropriate definitions in the provincial requirements.]

Appropriateness of internal models used to determine required capital for segregated fund guarantees

.07 The appointed actuary should prepare a report to support the opinion on the appropriateness of internal models used to determine required capital for segregated fund guarantees that outlines how the models comply with the related requirements of the regulator. The report should be completed before the provision of a signed opinion pursuant to subsection 2470. [Effective April 15, 2017]

.08 The opinion would be provided annually in support of the fiscal year-end regulatory capital filing on form(s) as directed by the regulator. The opinion would also be provided to the regulator upon a new application to the regulator for permission to use such a model for required capital purposes and upon request of the regulator when making a modification to an existing model approved by the regulator.

.09 In providing such an opinion, the actuary would not be opining on whether the underlying factors or specified methods to be followed are appropriate, but rather on the compliance with the requirements of the regulator.

.10 Here is the standard opinion language [insert appropriate wording where indicated by square brackets].

> "I have reviewed the internal model of [company name] for determining required capital for segregated fund guarantee risks as at [date] in the context of the requirements of [the regulator]. In my opinion, the [proposed] model is compliant in all material respects with the requirements of [the regulator] for an approved model used to determine required capital for segregated fund guarantee risks."

2500 Financial Condition Testing

2510 Scope

.01 Part 1000 applies to work within the scope of this section 2500.

.02 This section 2500 applies to the appointed actuary of an insurer when reporting on the insurer's financial condition pursuant to law.

2520 Analysis

.01 The appointed actuary should make an investigation at least once during each financial year of the insurer's recent and current financial position and financial condition, as revealed by financial condition testing for selected scenarios. [Effective January 1, 2020]

.02 The appointed actuary should make a report of each investigation in writing to the insurer's board of directors (or to the appropriate committee of the board such as audit committee, risk committee, etc., if they so delegate) or its chief agent for Canada. The report should identify possible actions, and reasons for those actions, for dealing with any threats to satisfactory financial condition that the investigation reveals. The actuary should also comment on the consistency of the results of the investigation and possible actions with the own risk and solvency assessment (ORSA). [Effective January 1, 2020]

.03 The appointed actuary should ensure that the investigation is current. The investigation should take into consideration recent events and recent financial operating results of the insurer. [Effective April 15, 2017]

.04 The timing and frequency of the appointed actuary's investigations would be sufficient to support timely corrective actions by management and the board of directors or chief agent for Canada.

Recent and current financial position

.05 The investigation would review operations of recent years and the financial position at the end of each of those years.

Financial condition testing

.06 Financial condition testing examines the effect of selected adverse scenarios on the insurer's forecasted capital adequacy. The actuary can supplement the financial condition testing with the use of other means, such as the ORSA and the business plan.

.07 The purpose of financial condition testing is to identify plausible threats to satisfactory financial condition, actions that would lessen the likelihood of those threats, and actions that would mitigate a threat if it materialized.

.08 Financial condition testing is defensive, i.e., it addresses threats to financial condition rather than the exploitation of opportunity.

Satisfactory financial condition

.09 The insurer's financial condition would be satisfactory if throughout the forecast period,

- Under the solvency scenarios, the statement value of the insurer's assets is greater than the statement value of its liabilities;
- Under going concern scenarios, the insurer meets the regulatory minimum capital ratio(s); and
- Under the base scenario, the insurer meets its internal target capital ratio(s) as determined by the ORSA.

Data, methods, and assumptions

.10 The actuary would start the forecast period using the data as of the most recent available fiscal year-end statement of financial position date.

.11 The assumptions and methods would reflect up-to-date studies and analysis available to the actuary.

.12 The policy liabilities would be revalued at the end of the first financial year of the forecast period if a change in assumption or method that is expected to be made by the insurer would result in a material change to the financial position of the insurer.

.13 The actuary would consider recent events and recent operating results of the insurer up to the date of the report.

.14 If an adverse event occurs between the date of the report and the date of its presentation to the insurer's board of directors (or its chief agent for Canada), then the actuary would, at a minimum in the presentation to the insurer's board of directors (or its chief agent for Canada), address the event and its potential implications on the results of the investigation. If appropriate, the actuary would redo the investigation.

Forecast period

.15 The forecast period for a scenario would be sufficiently long to be aligned with the risk emergence and the recognition of impacts through the accounting and solvency results, and to capture the effect of management actions.

Scenarios

.16 The scenarios would consist of a base scenario and adverse scenarios. Each scenario takes into account not only in-force policies but also the policies assumed to be sold or acquired during the forecast period, and both insurance and non-insurance operations (e.g., asset management, banking, or trust company subsidiaries).

Base scenario

.17 The base scenario would be a realistic set of assumptions used to forecast the insurer's financial position over the forecast period. Normally, the base scenario would be consistent with the insurer's business plan. The actuary would accept the business plan's assumptions for use in the base scenario unless these assumptions are so inconsistent or unrealistic that the resulting report would be misleading. The actuary would report any material inconsistency between the base scenario and the business plan.

Adverse scenarios

.18 An adverse scenario is developed by stress testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. The number and types of adverse scenarios may vary among insurers and over time for a particular insurer.

Solvency scenario

.18.1 A solvency scenario is a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a solvency scenario is both plausible and adverse.

.19 The actuary would consider material, plausible risks or events to the insurer. Reverse stress testing can help assess whether certain risk factors need to be tested, on the grounds that certain risk factors could never deteriorate to the point where they would be a threat to the insurer's financial condition. The actuary can thereby determine whether a material, plausible risk or event exists for the insurer over the forecast period.

Going concern scenario

.19.1 A going concern scenario is an adverse scenario that is more likely to occur and/or less severe than a solvency scenario, and could include risks not considered in solvency scenarios.

Risk categories

.20 The actuary would assess various risk categories and identify those that are relevant to the insurer's circumstances when considering threats to capital adequacy under adverse scenarios.

.21 Repealed

Integrated scenarios

.22 The actuary would construct integrated scenarios by combining two or more risk factors whose combination gives rise to an adverse scenario.

.23 In developing integrated scenarios, the actuary would consider how risk factors interact. For example, the impact of combining adverse scenarios for two or more risk factors, where each is associated with a relatively high probability, may give rise to an integrated adverse scenario to which the insurer's financial condition is sensitive. In such cases, an integrated scenario would be constructed by combining stress tests related to two or more risk factors. An integrated scenario would be designed so as to itself constitute an adverse scenario.

.24 Repealed

Ripple effects

.25 In assuring consistency within each scenario, the actuary would consider ripple effects, including policy owner action, management's routine action, and regulatory action. Although most of the other assumptions used in the base scenario may remain appropriate under the adverse scenario, some may require adjustment to reflect the interdependence of assumptions in the adverse scenario.

.26 Selection of the assumptions for management's routine action would, where appropriate, take into account

- Effectiveness of the insurer's management information systems and adjustment mechanisms;
- Insurer's historical record of promptness and willingness, to respond to adversity;
- Policy owner action; and
- External environment assumed in the scenario.

.27 The actuary would report management's routine action, so that users may consider its practicality and adequacy. The actuary may also report the results assuming that the insurer does not respond to the adversity.

.28 Ripple effects also include regulatory action, which would vary depending on the regulatory capital ratio requirement breached by the adverse scenario. The actuary would consider action that could be taken by the Canadian regulator(s) as well as action taken by regulators in foreign jurisdictions. Such regulatory action and associated management action would consider the local assessment of solvency regardless of the insurer's worldwide solvency position as measured by Canadian regulatory standards. The actuary could also review the regulatory actions included in the ORSA's scenario testing, including internal target-setting exercise, and consider their applicability to the financial condition testing's adverse scenarios.

Corrective management actions

.29 For each of the adverse scenarios that would result in a threat to satisfactory financial condition, the actuary would identify possible corrective management actions that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized.

.29.1 Consideration would also be given to the effectiveness of possible corrective management actions in a volatile or stressed environment.

Management actions

.29.2 Management actions may include but are not limited to

- Repricing of insurance products;
- Policyholder dividend scale updates;
- Adjustments to non-guaranteed product elements;
- Suspending dividend payments, capital reductions, and transfers to the parent or home office, where applicable;
- Raising additional capital or adopting an approved plan to raise additional capital if and when needed within a reasonable time frame, or, in the case of a branch, requesting transfer of adequate funds from the parent company;
- Strengthening risk management practices;
- Mitigating the risk causing the capital shortfall; and
- An increased level of monitoring and reporting with respect to the insurer's capital position.

.30 Whether a management action is considered a ripple effect, a corrective management action, or a combination of both, would depend on the scenario analyzed and circumstances of the insurer.

Scope of the investigation and report

.31 The report would contain the key assumptions of the base scenario and the adverse scenarios posing risks to the satisfactory financial condition of the insurer.

.32 The report would disclose each of the risks considered in undertaking the financial condition testing analysis. It is expected that the actuary would scenario test and report at least once during each financial year on the base scenario, and adverse scenarios posing significant risk for the insurer.

.33 The report would also contain the adverse scenarios examined that cause the insurer to fall below its internal target capital ratio(s) as determined by the ORSA. The report would make it clear whether under these scenarios the regulators may impose restrictions on the operations of the insurer, including its ability to write new business.

.34 If the investigation identifies any plausible threat to satisfactory financial condition, then the actuary would identify possible corrective management action that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized. For each such adverse scenario reported upon, the actuary would report the results both with and without the effect of corrective management action. The actuary would ensure that the disclosure of the corrective management action is sufficiently clear so that users may consider its practicality and adequacy.

.35 The report would present the financial position of the insurer at each fiscal year-end throughout the forecast period.

Revaluation of the policy liabilities

.36 Ideally, for the base and each adverse scenario, the insurance contract liabilities and, if applicable, other policy liabilities or reinsurance assets, would be revalued throughout the forecast period.

Frequency and/or timing

.37 The frequency and/or timing of the report would depend on the urgency of the matters being reported and on the desirability of aligning financial condition testing into the insurer's financial planning cycle and the ORSA process.

.38 The frequency and/or timing of the actuary's investigation would be adjusted where an adverse change in the insurer's circumstances since the last investigation may be so significant that to delay reporting to the time of the next scheduled investigation would be imprudent. For example, failure to meet the internal target capital ratio(s), or adoption of a radically different business plan, may necessitate the preparation of an immediate report.

2530 Reporting

.01 In the case of a Canadian insurer, the appointed actuary should report to the board of directors or to an appropriate committee of the board (audit committee, risk committee, etc.) if they so delegate. In the case of a Canadian branch of a foreign insurer, the appointed actuary should report to the chief agent for Canada and may also report to the responsible senior executive in the parent head office. [Effective February 22, 2018]

.02 In order to give the insurer's senior management an opportunity to react to the results of the investigation, the actuary would discuss the report with the insurer's senior management in advance of its submission to the board of directors or chief agent for Canada.

.03 The report would be in writing, but an additional oral report that permits questions and discussions is desirable. An interpretative report would be more useful than a statistical report. The actuary would also consider other reporting such as the ORSA report to ensure, where appropriate, the consistency of messages and/or delivery of consolidated ORSA and financial condition testing results.

.04 The report would be submitted within 12 months following each fiscal year-end.

2540 Opinion by the actuary

.01 The report should contain an opinion signed by the appointed actuary. [Effective April 15, 2017]

.02 In this opinion, "future financial condition" has the same meaning as "financial condition." The actuary may use the words "future financial condition" in order to comply with legislation or regulation in some jurisdictions.

.03 The wording of the opinion follows: [insert appropriate wording where indicated by square brackets]

> "I have completed my investigation of the [future] financial condition of [insurer name] as at [date] in accordance with accepted actuarial practice in Canada.
>
> I have analyzed its forecasted financial positions over an appropriate forecast period under a series of scenarios. As part of my investigation, I have used [the ORSA and its determination of] or [insurer name] internal target capital ratio(s).
>
> [My report includes the identification of corrective management actions that could be taken to mitigate the effect of adverse scenarios threatening [[insurer name] [solvency]] or/and [its ability to operate on a going concern basis]].
>
> In my opinion, the [future] financial condition of the insurer [is satisfactory] or [is satisfactory subject to…] or [is not satisfactory for the following reason(s)...]."
>
> [Montréal, Québec] [Mary F. Roe]
> [Report date] Fellow, Canadian Institute of Actuaries

.04 A satisfactory opinion would disclose the action(s) it is subject to for any of the following situations:

- The base scenario projected regulatory capital ratios are maintained or brought back above internal target capital ratios as a result of an existing plan consistent with regulatory expectations.
- For the base scenario:
  - Regulatory capital ratios are projected to decrease below internal target capital ratio(s) at a period beyond the regulator's monitoring horizon;
  - The insurer has a plan to bring the ratios back above internal targets within a time frame consistent with regulatory expectations; and
  - The appointed actuary is satisfied that such plan is realistic.
- For going concern scenarios, the appointed actuary is satisfied that corrective management actions can restore the insurer's regulatory capital ratio(s) to above regulatory minimum capital ratio(s) in a manner consistent with regulator's expectations.
- For solvency scenarios, the appointed actuary is satisfied that corrective management actions under the control of the insurer can restore the insurer's assets to be sufficient to meet its obligations.

.05 Situations where a satisfactory financial condition is met because of management's routine actions, would not require the opinion to state those actions.

2600 Ratemaking: Property and Casualty Insurance

2610 Scope

.01 Part 1000 applies to work within the scope of this section 2600.

.02 This section 2600 applies to the derivation of indicated rates for an insurance contract of property and casualty insurance written by an insurer, a reciprocal insurance exchange, or an underwriting syndicate.

.03 This section 2600 does not apply to the derivation of indicated rates for public personal injury compensation plans covered by the Practice-Specific Standards for Public Personal Injury Compensation Plans.

.04 This section 2600 applies to the derivation of indicated rates for any entity, such as a residual market mechanism or an advisory organization, which derives indicated rates for an insurance contract to be written by an insurer, regardless of whether or not that entity is itself an insurer.

.05 This section 2600 applies to the derivation of indicated rates, but not to the recommendation or selection of rates to be charged. The recommended or selected rates may reflect considerations beyond those set forth in this section 2600.

.06 This section 2600 also applies to the derivation of indicated rates for insurance risks accepted by a property and casualty quasi-insurer, similar to insurance risks accepted under an insurance contract. In this section 2600, "property and casualty quasi-insurer" means an entity that assumes insurance risks that a property and casualty insurer may assume, without having the legal form of an insurer. Examples of property and casualty quasi-insurers include

- Federal or provincial crown corporations or agencies acting in a capacity similar to a property and casualty insurer;
- Providers of extended warranties; and
- Self-funding mechanisms, such as those created by members of a professional association, or entities that retain some or all of their property and casualty insurance risk.

2620 Method

.01 The best estimate present value of cash flows relating to the revenue at the indicated rate should equal the best estimate present value of cash flows relating to the corresponding claim costs and expense costs, plus the present value of a provision for profit, over a specified period of time. [Effective April 15, 2017]

.02 The actuary should select appropriate methods, techniques, and assumptions recognizing that such elements depend on the circumstances affecting the work and that a variety of actuarial methods may be appropriate to derive an indicated rate. [Effective February 1, 2018]

Data

.03 The actuary would consider the availability and relevance of subject experience and related experience.

Credibility

.04 The actuary would consider the blending of information from subject experience with information from one or more sets of related experience to improve the predictive value of estimates.

Changes in circumstances

.05 The actuary would consider that the subject experience, related experience, and future cash flows may be affected by changes in circumstances that may affect expected claim costs, expense costs, and provision for profit.

.06 Relevant circumstances subject to change may include items that are largely under the control of the entity providing insurance, such as

- Underwriting practice;
- Distribution system;
- Claims handling and case estimate setting practice;
- Reinsurance arrangements;
- Data processing and accounting systems;
- Distribution or type of business written;
- Provisions of the insurance contract(s), when not legislated;
- Premium rates; and
- Rating variables;

as well as items that are largely not under the control of the entity providing insurance, such as

- Legislated coverage or benefits; and
- The economic, social, and legal environments.

Development

.07 The actuary would consider that subject experience and related experience may be subject to development over time.

Trend

.08 The actuary would consider that subject experience and related experience may be subject to trend over time.

Unusual events

.09 The actuary would consider that subject experience and related experience may or may not have been subject to catastrophes, large losses, or other unusual events.

Provision for expense costs

.10 The actuary would determine the provision for expense costs that is appropriate for the period during which the rates are expected to be in effect.

.11 In selecting a provision for expense costs, the actuary would consider

- The various categories of expense costs that are incurred including, as may be applicable, residual market assessments, statutory assessments, policyholder dividends, and reinsurance costs;
- That expense costs may not be directly proportional to premium; and
- That one-time expense costs may need to be amortized.

.12 The provision for expense costs, or other assumptions that are pertinent to its derivation, may be specified to the actuary under the terms of an appropriate engagement.

Provision for profit

.13 An indicated rate would include a provision for profit.

.14 The provision for profit, or other assumptions that are pertinent to its derivation, may be specified to the actuary under the terms of an appropriate engagement.

Time value of money

.15 The investment return rate for calculating the present value of cash flows would reflect the expected investment income to be earned on assets that might be acquired with the net cash flows resulting from the revenue at the indicated rate.

.16 Among various possible sets of such assets the actuary would consider

- Risk-free assets of appropriate duration;
- Fixed-income assets of appropriate duration; and
- Assets which are expected to be acquired.

.17 The actuary would consider the fact that the provision for profit is not independent of the selected investment return rate and its associated uncertainty.

2630 Reporting

.01 If an external user report is required and the actuary can report without reservation, the actuary's report should include the standard reporting language consisting of the following scope paragraph,

> I have derived the indicated rate(s) in accordance with accepted actuarial practice in Canada, on behalf of [entity commissioning the work], for the following insurance category(ies): [name of insurance category(ies)], to be effective Month XX, 20XX for new business and Month XX, 20XX for renewal business. [Effective February 1, 2018]

.02 If an external user report is required and the actuary cannot report without reservation, the actuary should modify the standard reporting language accordingly. [Effective February 1, 2018]

.03 An additional opinion paragraph may be included to conform to the requirements of an external user.

2700 Policyholder Dividend Determination

2710 Scope

.01 Part 1000 applies to work within the scope of this section 2700.

.02 Section 2700 applies to advice provided on policyholder dividend determination on individual life, annuity, and health policies.

2720 Report on policyholder dividends

.01 There should be a written report which documents the advice on policyholder dividend determination, and which describes the framework of facts, assumptions, and procedures upon which the advice was based. [Effective April 15, 2017]

.02 The report should include

- A description of the process used to determine dividends;
- The manner in which policy and experience characteristics are reflected in that process; and
- The methodology used to calculate dividends, including specific factors used to reflect policy and experience characteristics. [Effective April 15, 2017]

.03 The report should state whether or not the contribution principle has been followed, and, if it has not been followed, the report should describe any deviations and their rationale. [Effective April 15, 2017]

3000 – Pension Plans

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3100 Scope

.00 Part 1000 applies to work within the scope of this part 3000.

.01 The standards in part 3000 apply as follows:

- Section 3200 applies to advice that an actuary provides regarding the funded status or funding of a pension plan, except where such advice is with respect to:
  - The wind-up, in full or in part, of a pension plan; or
  - The financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements;
- Section 3300 applies to advice that an actuary provides on the funded status or funding with respect to the wind-up, in full or in part, of a pension plan;
- Section 3400 applies to advice that an actuary provides with respect to financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements; and
- Section 3500 applies to advice that an actuary provides regarding the computation of commuted values in the circumstances described in subsection 3510.

The wind-up of a pension plan involves the settlement of plan benefits and distribution of all plan assets. The cessation of benefit accruals or termination of a plan, not involving the settlement of plan benefits and distribution of plan assets, would not constitute a plan wind-up.

.02 The standards in sections 3200 through 3400 apply to advice with respect to a pension plan, including any arrangement that provides retirement income to its members, whether funded or not, whether registered or not, and whether in the private or public sector, except for:

- A defined contribution pension plan (noting that the standards do apply, however, to any pension plan that is a hybrid of a defined contribution pension plan and a defined benefit pension plan);
- A pension plan whose benefits are all guaranteed by a life insurer; and
- Social security programs such as the Canada Pension Plan, Québec Pension Plan, and the pension provided by the federal Old Age Security Act.

3200 Advice on the Funded Status or Funding of a Pension Plan

.01 This section 3200 applies to advice that an actuary provides regarding the funded status or funding of a pension plan, except where such advice is with respect to:

- The wind-up, in full or in part, of a pension plan; or
- The financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements.

3210 General

.01 The actuary's advice on the funded status or funding of a pension plan should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should select an asset valuation method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary's advice on the funded status of a pension plan should take account of the pension plan's benefits at the calculation date, except that the actuary's advice may anticipate a pending amendment to the pension plan that increases the value of its benefits. [Effective December 31, 2010]

.05 The actuary's advice on the funded status or funding of a pension plan should take account of expenses if they are expected to be paid from the pension plan's assets. [Effective December 31, 2010]

.06 The actuary's advice on the funded status or funding of a pension plan may, consistent with the circumstances affecting the work, take into account the value and the terms of a letter of credit of which the pension plan is the beneficiary. [Effective February 1, 2018]

.07 If the actuary is providing advice on funding:

- The actuary should determine the next calculation date, and
- The actuary's advice on funding should cover at least the period between the calculation date and the next calculation date. [Effective December 31, 2010]

Circumstances affecting the work

.08 For the purposes of section 3200, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funded status or the funding of the pension plan, or a combination thereof;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.09 In the case of a pension plan registered under the Income Tax Act (Canada), the actuary would be familiar with guidance with respect to the funding of pension plans that has been published by an applicable regulatory authority.

.10 Advice on funding would include:

- A valuation to establish the amount of a letter of credit to secure the payment of pension plan benefits;
- Advice regarding an amount of assets to be earmarked, but not segregated, to a trust fund, to cover pension benefit commitments; and
- Advice on the funding implications of a plan amendment.

.11 The terms of an appropriate engagement may specify applicable objectives of funding, which may include a formal or informal funding policy. For example, the terms of an appropriate engagement for a pension plan registered under the Income Tax Act (Canada):

- May be limited to preparation of an external user report on the basis of applicable law including the minimum contributions required by law;
- May require the preparation of an external user report recommending contributions reflecting objectives of funding specified by the plan sponsor or plan administrator, as applicable, in addition to the requirements of law; and
- Where contributions are fixed, may require the preparation of an external user report reflecting objectives of funding specified by the plan administrator or other appropriate authority, as applicable in addition to the requirements of law.

.12 The terms of an appropriate engagement may specify the use of a particular actuarial cost method and/or a particular asset valuation method, consistent with these standards.

.13 Objectives of funding specified by the terms of an appropriate engagement may include considerations such as the security of benefits and related provisions for adverse deviations, the orderly and rational allocation of contributions among time periods, and/or inter-generational equity.

.14 Depending on the circumstances affecting the work, the actuary's advice on funding may describe a range of contributions.

Actuarial cost methods

.15 Actuarial cost methods include:

- Cost allocation methods, which allocate the actuarial present value of projected benefits among time periods, including attained age actuarial cost methods, entry age actuarial cost methods, aggregate actuarial cost methods, and individual level premium actuarial cost methods;
- Benefit allocation methods, which allocate a portion of the actuarial present value of projected benefits to a time period as a function of the change in accrued or projected benefits during the period, including the accrued benefit actuarial cost method, the unit credit actuarial cost method and the projected unit credit actuarial cost method; and
- Forecast actuarial cost methods, which allocate a portion of the actuarial present value of projected benefits to the forecast period based on:
    - The actuarial present value, at the calculation date, of projected benefits at the end of the forecast period including, if appropriate, benefits for those who are expected to become members between the calculation date and the end of the forecast period;

    minus

    - The actuarial present value of projected benefits at the calculation date;

    plus

    - The actuarial present value, at the calculation date, of benefits expected to be paid during the forecast period.

.16 When using a forecast actuarial cost method, the beginning and ending actuarial present value of projected benefits may be calculated from the perspective of either a hypothetical wind-up valuation or a going concern valuation.

Asset valuation methods

.17 The use of an asset valuation method that produces an asset value different from market value may be appropriate depending on the circumstances affecting the work. For example, the use of a smoothed asset value may be appropriate to moderate the volatility of contribution rates for purposes of advice on funding.

.18 The value of assets may be, subject to specific requirements for different types of valuation, any of:

- Their market value;
- Their market value adjusted to moderate volatility in investment returns;
- The present value of their cash flows after the calculation date; and
- Their value assuming a constant rate of return to maturity in the case of illiquid assets with fixed redemption values.

Deferred recognition of pending amendment

.19 If, at the calculation date, an amendment to the pension plan is definitive or virtually definitive:

- If the effective date of the amendment is during the period for which the report gives advice on funding, then the advice on funding up to the effective date may disregard the amendment, unless otherwise required by law, but the advice on funding after the effective date would take the amendment into account; or
- If the effective date of the amendment is after the period for which the report gives advice on funding, then the advice on funding may disregard the amendment unless otherwise required by law.

.20 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date at which the amendment becomes either definitive or virtually definitive.

Next calculation date

.21 The next calculation date is the latest date for which the actuary considers the advice on funding to be applicable. The actuary would take into consideration the law and the terms of an appropriate engagement in determining the next calculation date.

3220 Types of Valuations

.01 When giving advice on the funded status or funding of a pension plan, the actuary should undertake one or more types of valuations that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

Types of valuations

.02 There are different types of valuations that an actuary may undertake when giving advice on the funded status or funding of a continuing pension plan, the most common of which are:

- A going concern valuation;
- A hypothetical wind-up valuation; and
- A solvency valuation.

3230 Going Concern Valuation

.01 For a going concern valuation the actuary should:

- Assume that the plan continues indefinitely;
- Select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the terms of an appropriate engagement; and
- Consider all benefits of which the actuary is aware, including contingent benefits, payable under the pension plan and should include provision for all such benefits expected to be paid while the plan is ongoing unless:
  - The law requires the valuation to exclude such benefits; or
  - The law permits the exclusion of such benefits and the terms of an appropriate engagement stipulate that the actuary exclude such benefits. [Effective February 1, 2018]

Assumptions

.02 For pension plans that are funded, in selecting the best estimate assumption for the discount rate, the actuary may either:

- Take into account the expected investment return on the assets of the pension plan at the calculation date and the expected investment policy after that date; or
- Reflect the yields on fixed income investments, considering the expected future benefit payments of the pension plan and the circumstances affecting the work.

.03 In establishing the discount rate assumption, the actuary would assume that there will be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

.04 If the plan is a "designated plan" as that term is defined in the Income Tax Regulations (Canada) and the purpose of the going concern valuation is to determine the maximum funding permitted by law, then the actuary would use assumptions stipulated by law for that purpose.

Contingent benefits

.05 An example of a contingent benefit relevant to a going concern valuation is a provision granting the employer or plan administrator the right to waive early retirement reductions to members retiring from active employment. In making provision for such a contingent benefit, the actuary would consider past experience, current circumstances and future expectations relating to the employer's or plan administrator's granting of such benefits.

Benefits stipulated by law

.06 If the plan is a "designated plan", as that term is defined in the Income Tax Regulations (Canada), and the purpose of the going concern valuation is to determine the maximum funding permitted by law, then the actuary would reflect the benefits stipulated by law for that purpose.

3240 Hypothetical Wind-up Valuation

.01 A hypothetical wind-up valuation determines the funded status of a pension plan on the assumption that the plan is wound up at the calculation date. The standards for a full wind-up valuation in section 3300 apply to a hypothetical wind-up valuation except for the external user report requirements therein and as superseded by the following recommendations. [Effective September 18, 2013]

.02 For a hypothetical wind-up valuation, the actuary should determine benefit entitlements on the assumption that the pension plan has neither a surplus nor a deficit. [Effective September 18, 2013]

.03 In determining the benefit entitlements, the actuary should postulate a scenario upon which the hypothetical wind-up valuation is based, taking account of the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary should take account of contingent benefits that would be payable under the postulated scenario for the hypothetical wind-up. [Effective September 18, 2013]

.05 For a hypothetical wind-up valuation, the actuary may assume that the wind-up date, the calculation date and the settlement date are coincident. [Effective September 18, 2013]

.05.1 For a hypothetical wind-up valuation, the actuary may assume that benefits would be settled by the purchase of annuities regardless of any limitation of capacity in the market for group annuity contracts. [Effective September 18, 2013]

.06 For a hypothetical wind-up valuation, the value of assets should be the market value of assets. [Effective September 18, 2013]

.07 For a hypothetical wind-up valuation, the actuary should select an explicit assumption for expenses expected to be payable from the pension plan's assets to wind up the pension plan. [Effective September 18, 2013]

Membership data

.08 The precision of the membership data is less critical for a hypothetical wind-up valuation than for an actual wind-up valuation.

.09 Since an actual wind-up is not occurring, pertinent membership data may not be available. The actuary would make appropriate assumptions regarding such missing membership data. For example, it may be appropriate to retroject current earnings based on aggregate historical pay increases in order to estimate final average earnings.

Postulation of scenarios

.10 There are often multiple scenarios regarding the circumstances that may result in the wind-up of a pension plan. For a hypothetical wind-up valuation, the actuary may postulate any reasonable, internally consistent, scenario regarding the circumstances resulting in the wind-up of a pension plan, consistent with the circumstances affecting the work. For the postulated scenario, the actuary would reflect the treatment of any contingent benefits, including:

- Those that are contingent upon the wind-up scenario, such as a plant closure benefit; or
- Those that are required by law, such as a provision for earlier commencement of deferred pension entitlements in the event of plan wind-up; and
- Those that are contingent upon a factor other than the wind-up scenario.

.11 Examples of contingent benefits that are dependent upon factors other than the wind-up scenario or as required by law are:

- A provision granting the employer or plan administrator the discretion to waive early retirement reductions; and
- A provision providing enhanced benefits if funds are sufficient.

Subsequent events

.12 The actuary may reflect subsequent events in the valuation provided that doing so either increases the actuarial present value of the projected benefits at the calculation date or reduces the value of the pension plan's assets at the calculation date.

Wind-up expenses

.13 Since the actuary would assume that the pension plan has neither a surplus nor a deficit, wind-up expenses related to the resolution of surplus or deficit issues need not be considered.

.14 In developing the assumption for expenses expected to be payable from the pension plan's assets to wind up the pension plan, the actuary would also make an assumption as to the solvency of the employer. The assumption with respect to the payment of expenses and the assumption with respect to the solvency of the employer would be consistent.

Settlement Methods

.15 A hypothetical wind-up valuation requires the actuary to select assumptions about the methods of settlement.

.16 The actuary may assume a settlement method permitted by law or any relevant regulatory policy or guideline.

.17 The actuary may assume settlement by means of a replicating investment portfolio if permitted by law or any regulatory policy or guideline, or where it is anticipated that annuities could not be purchased due to group annuity capacity limitations. The assumed replicating portfolio would provide for an appropriate level of security for the pension benefits covered.

.18 The actuary may incorporate assumptions as to the exercise of regulatory discretion, a change in law, or a plan amendment which would be required to enable a practical settlement of benefits. When making such assumptions, the actuary would consider any relevant regulatory policy, guidance, or precedent.

.19 For example, for a plan where pensions are indexed with the Consumer Price Index and where it is impractical to purchase annuities indexed with the Consumer Price Index, the actuary may assume that annuities would be purchased with indexing at a fixed percentage rate of comparable value to indexing in accordance with the plan provisions.

3250 Solvency Valuation

.01 A solvency valuation typically is a form of a hypothetical wind-up valuation required by law and the actuary should apply the standards for a hypothetical wind-up valuation unless:

- Otherwise required by law; or
- Otherwise permitted by law and stipulated by the terms of an appropriate engagement. [Effective December 31, 2010]

.02 Examples of exceptions permitted by law for the preparation of a solvency valuation under the law of certain jurisdictions include:

- Use of a value of assets other than market value;
- Use of one or more assumptions that are not best estimate assumptions; or
- Exclusion of certain benefits from the valuation.

3255 Other Valuations

.01 For a valuation that is not a going concern valuation, a hypothetical wind-up valuation, or a solvency valuation, the actuary should select actuarial methods and actuarial assumptions that are consistent with the terms of an appropriate engagement. [Effective December 30, 2012]

.02 To the extent that a valuation is not a going concern valuation, hypothetical wind-up valuation, or solvency valuation, but has characteristics similar to one or more of these types of valuations, the actuary would consider any relevant standards for these types of valuations in undertaking the work.

.03 For example, a valuation for determining the required amount of a letter of credit for a supplemental plan is typically similar to a hypothetical wind-up valuation, but with the actuarial methods and actuarial assumptions stipulated by the terms of the engagement. In such circumstances, the actuary would consider the relevant standards for hypothetical wind-up valuations in undertaking the work.

3260 Reporting: External User Report

.01 An external user report on work pursuant to section 3200 should:

- Include the calculation date, the report date, and the next calculation date;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, including their market value and a summary of the assets by major category;
- Describe the pension plan's provisions, including the identification of any pending definitive or virtually definitive amendment;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State the type of each valuation undertaken under the terms of the appropriate engagement; and
- Describe any significant terms of the appropriate engagement that are material to the actuary's advice. [Effective February 1, 2018]

.02 For each going concern valuation undertaken by the actuary, the external user report should:

- Describe the rationale for any assumed additional returns, net of investment management expenses, from an active investment management strategy as compared to a passive investment management strategy, included in the discount rate assumption;
- Report the funded status at the calculation date and the service cost or the rule for calculating the service cost between the calculation date and the next calculation date;
- Disclose any pending but definitive or virtually definitive amendment of which the actuary is aware, and whether or not such amendment has been included in determining the funded status and the service cost;
- Describe any contingent benefits provided under the pension plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
- Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost; and
- If there is no provision for adverse deviations, include a statement to that effect. [Effective March 31, 2015]

.03 If an external user report includes one or more going concern valuations then the external user report should, for at least one such valuation included in the report, describe and quantify the gains and losses between the prior calculation date and the calculation date, unless the going concern valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.04 Repealed

.05 For each hypothetical wind-up valuation and solvency valuation undertaken by the actuary, the external user report should:

- Describe the basis for inclusion and the amount considered in respect of a letter of credit of which the pension plan is the beneficiary;
- Report the funded status at the calculation date;
- Include a description of the postulated scenario; and
- Include a description of the extent to which contingent benefits provided under the pension plan are included or excluded in determining the funded status. [Effective March 31, 2015]

.06 Repealed

.06.1 For each valuation that is not a going concern valuation, a hypothetical wind-up valuation, or a solvency valuation, the external user report should:

- Include a description of the extent to which contingent benefits provided under the pension plan are included or excluded. [Effective March 31, 2015]

.06.2 If an external user report includes one or more going concern valuations then the external user report should, for at least one such valuation included in the report, report the effects of using a discount rate 1.0% lower than that used for the valuation on:

- The actuarial present value, at the calculation date, of projected benefits allocated to periods up to the calculation date; and
- The service cost or the rule for calculating the service cost between the calculation date and the next calculation date;

unless

- The purpose of the valuation is the determination of the maximum funding permitted by law for a "designated plan", as that term is defined in the Income Tax Regulations (Canada); or
- The going concern valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The going concern valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.3 If an external user report includes one or more hypothetical wind-up valuations or solvency valuations then, for any one such hypothetical wind-up valuation or solvency valuation, the external user report should:

- Report the incremental cost between the calculation date and the next calculation date, in respect of the defined benefit portion of the plan;
- If the external user report does not include a going concern valuation, report the service cost or the rule for calculating the service cost between the calculation date and the next calculation date in respect of the defined contribution portion of the plan;
- Report the effect on the hypothetical wind-up or solvency liabilities, at the calculation date, of using a discount rate 1.0% lower than that used for the valuation; and
- If the external user report does not include a going concern valuation, describe and quantify the gains and losses between the prior calculation date and the calculation date;

unless

- The pension plan is a "designated plan" which has, as members, only persons "connected" with the employer as those terms are defined in the Income Tax Regulations (Canada); or
- The hypothetical wind-up valuation or solvency valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The hypothetical wind-up valuation or solvency valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.4 Where contributions are fixed or restricted by the terms of the pension plan or other governing documents, and the actuarial certification of the funding of the plan in accordance with the law or any regulatory policy or guideline is directly dependent on the results of a stochastic funding model regarding the adequacy of the contributions to the plan to sustain one or more target levels of benefits from the plan, the report should disclose the stochastic funding model results which are relevant to the provision of the actuarial certification. [Effective March 1, 2019]

Plausible adverse scenarios

.06.5 A plausible adverse scenario would be a scenario of adverse but plausible assumptions, relative to the best estimate assumptions otherwise selected for the valuation, about matters to which the pension plan's financial condition is sensitive. Plausible adverse scenarios vary among pension plans and may vary over time for a particular pension plan.

.06.6 If an external user report includes one or more going concern valuations, then the actuary should consider threats to the pension plan's future financial condition under plausible adverse scenarios that include, where appropriate, the following risks:

- Interest rate risk, the potential that interest rates will be lower than expected;
- Deterioration of asset values;
- Longevity risk, the potential that pension plan members will live longer than expected;
- For pension plans where contributions are fixed or restricted by the terms of the plan or other governing documents, the potential that the contribution base will be lower than expected;

unless

- The pension plan is a "designated plan" which has, as members, only persons "connected" with the employer as those terms are defined in the Income Tax Regulations (Canada); or
- The valuation is for a pension plan which is not registered under a pension benefits standards act of a province or the federal government of Canada; or
- The valuation is based on an extrapolation of results disclosed in a previous external user report. [Effective March 1, 2019]

.06.7 In considering the plausible adverse scenarios, the actuary may:

- Make reasonable determinations of the asset classes which are classified as fixed income investments;
- Restrict the impact of interest rate risk to the asset classes deemed to be fixed income investments and to the discount rate to the extent that the discount rate is affected by fixed income investments;
- Assess the impact of the risks in combination, but the actuary would not be required to do so;
- Reflect the impact of any compensating adjustments, such as a potential reduction in any margin implicit in the discount rate in response to a lower interest rate scenario;
- Reference any related work, such as asset-liability modelling work, with which the actuary has been involved or which has otherwise been made available to the actuary.

.06.8 If an external user report includes one or more going concern valuations, then the external user report should, for at least one such valuation included in the report, report the effects on:

- The funded status of the plan on a market value or smoothed value basis at the calculation date, separating the effects on assets and liabilities, where applicable; and
- The service cost or the rule for calculating the service cost between the calculation date and the next calculation date;

of the plausible adverse scenarios selected by the actuary for the risk assessments under paragraph 3260.06.6. [Effective March 1, 2019]

.07 An external user report that provides advice on funding should:

- Describe the determination of contributions or a range of contributions between the calculation date and the next calculation date;
- If contributions are fixed by the terms of the plan or other governing documents, then either:
  - Report that the contributions are adequate to fund the pension plan in accordance with the law; or
  - Report that the contributions are not adequate to fund the pension plan in accordance with the law; and
    - Describe the contributions required to fund the pension plan adequately in accordance with the law;
    - Describe one or more possible ways in which benefits may be reduced such that the contributions would be adequate to fund the pension plan in accordance with the law; or
    - Describe a combination of increases in contributions and reductions in benefits that would result in the funding being adequate to conform to the law. [Effective December 30, 2012]

.08 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement as to assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement as to methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement as to conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 30, 2012]

.09 An external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

Membership data

.10 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

.11 The actuary may describe limitations on the tests conducted in the review of the data which has been determined to be sufficient and reliable for purposes of the valuation(s). For example, the actuary may describe that the data tests will not capture all possible deficiencies in the data and reliance is also placed on the certification of the plan administrator as to the quality of the data.

Types of valuations

.12 The external user report may provide information with respect to multiple valuations, but would, as a minimum:

- If the pension plan is a registered pension plan and is not a "designated plan", as that term is defined in the Income Tax Regulations (Canada), provide information with respect to:
  - A going concern valuation, if mandated by law or specified by the terms of an appropriate engagement;
  - A hypothetical wind-up valuation under the scenario regarding the circumstances resulting in the wind-up that, subject to paragraph 3260.19, maximizes the wind-up liabilities, unless the pension plan and the law do not define the benefits payable upon wind-up; and
  - Any other hypothetical wind-up or solvency valuation mandated by law;
- If the pension plan is a "designated plan" as that term is defined in the Income Tax Regulations (Canada), provide information with respect to:
  - A going concern valuation, if mandated by law or specified by the terms of an appropriate engagement;
  - A hypothetical wind-up valuation under the scenario regarding the circumstances resulting in the wind-up that, subject to paragraph 3260.19, maximizes the wind-up liabilities, unless the pension plan and the law do not define the benefits payable upon wind-up or the plan has, as members, only persons "connected" with the employer as that term is defined in the Income Tax Regulations (Canada); and
  - Any other hypothetical wind-up or solvency valuation mandated by law;

and

- If the pension plan is not a registered pension plan, include information with respect to the types of valuations required by the circumstances affecting the work.

Significant terms of appropriate engagement

.13 Significant terms of the appropriate engagement may include matters like:

- The use of a specified actuarial cost method;
- The use of a specified asset valuation method;
- The exclusion of benefits for purposes of a valuation, as permitted by law;
- The extent of margins for adverse deviations, if any, to be included in selecting assumptions;
- A policy to fund only the minimum contributions required by law; and
- Specified methodology for the determination of contribution requirements in excess of the requirements of law.

Service cost

.13.1 For a plan that is a hybrid of a defined contribution pension plan and a defined benefit pension plan, the service cost for a going concern valuation would include the service cost in respect of both the defined contribution portion of the plan and the defined benefit portion of the plan.

Reporting gains and losses

.14 The reported gains and losses for a going concern valuation would include the gain or loss due to a change in the actuarial cost method or a change in the method for valuing the assets and each significant change in assumptions and plan provisions determined at the calculation date. If an amendment to the pension plan prompts the actuary to change the assumptions, the actuary may report the combined effect of the amendment and the resultant change in assumptions.

Discount rate sensitivity

.15 When following the recommendations to illustrate the effect of a change in discount rate on a valuation, the actuary would maintain all other assumptions and methods as used in the underlying valuation.

Incremental cost

.15.1 The incremental cost for a hypothetical wind-up valuation or a solvency valuation represents the present value, at the calculation date, of the expected aggregate change in the hypothetical wind-up liability or solvency liability between the calculation date and the next calculation date, increased for expected benefit payments between the calculation date and the next calculation date.

Methods

.16 For each valuation included in the external user report for which there was a prior valuation, the description of the actuarial cost method would include a description of any change to the actuarial cost method used in the prior valuation and the rationale for such change.

.17 For each valuation included in the external user report for which there was a prior valuation, the description of the method to value the assets would include a description of any differences in change to the asset valuation method used in the prior valuation and the rationale for such change.

Assumptions

.18 For each valuation included in the external user report for which there was a prior valuation, the description of assumptions would include a description of each change to the assumptions from the assumptions used in the prior valuation.

.18.1 When describing the assumptions for methods of settlement for a hypothetical wind-up or solvency valuation, the actuary would describe any related limitations. For example:

- If the settlement method assumes that annuities would be purchased but it might not be possible to purchase annuities on actual wind-up of the plan due to capacity limitations; or
- If the settlement method assumes the exercise of regulatory discretion, a change in law, or a plan amendment for which there is no specific authority.

Scenario that maximizes wind-up liabilities

.19 In reporting the funded status of the pension plan under the scenario regarding the circumstances resulting in the wind-up that maximizes the wind-up liabilities, the actuary would include benefits that are contingent upon the scenario regarding the circumstances resulting in the wind-up or mandated by law. However, the actuary may disregard:

- Benefits that are contingent upon a factor other than the scenario regarding the circumstances resulting in the wind-up or as mandated by law; and
- Possible plan member earnings after the calculation date.

Other types of valuations

.19.1 Valuations that are not going concern valuations, hypothetical wind-up valuations, or solvency valuations are usually similar in nature to one of these three types of common valuations. In preparing the external user report for such a valuation, the actuary would consider the relevant reporting requirements for a type of valuation similar to the valuation undertaken and would include additional disclosures as appropriate.

Statements of opinion

.20 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified but would be followed to the extent practicable.

.21 While a separate statement regarding assumptions would generally be included in respect of each purpose of the valuation, the statements regarding assumptions may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding assumptions applies to each of the valuation's purposes.

.22 While a separate statement regarding methods would generally be included in respect of each purpose of the valuation, the statements regarding methods may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding methods applies to each of the valuation's purposes.

3270 Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements

Purposes

.23 For a statutory funding valuation that specifically requires the use of stochastic models to comply with pension plan funding requirements in accordance with the law or any regulatory policy or guideline, the disclosure of model inputs and outputs are meant to

- Assist the users of the report or work product to understand the assumptions and methods used in the model and the distribution of outcomes from the model; and
- Enable another actuary to assess whether the assumptions and methods used in the model and the distribution of outcomes from the model are reasonable.

Model Inputs

.02 The actuary reporting on the results of a statutory funding valuation using stochastic models for the purposes of complying with specific regulatory pension plan funding requirements (e.g., under the New Brunswick Shared Risk Plans Regulation) should disclose the following model inputs:

- Risk management goals, funding policy, deficit recovery plan and funding excess utilization plan or other such policies that require contingent calculations, reflected in the stochastic analysis;
- Number of scenarios and time period over which the scenarios are forecast;
- Methodology used in the stochastic modelling, including the approach to interest rate forecasting and development of the funding liability discount rate;
- Projected experience decrement assumptions and whether or not these are deterministic or stochastic. If the latter, the volatility for the decrements and a description of the model used to simulate scenarios;
- Future valuations' decrement assumptions, if applicable;
- Assumptions for the new entrants into the plan, including population growth assumption and new entrant profiles;
- Methodology for wage increases, if relevant, including increases in the year's maximum pensionable earnings and the defined benefit limit prescribed under the *Income Tax Act (Canada)*;
- Frequency of valuations over the projection period;
- Anticipated expenses charged to the pension fund, broken down separately into
    - Administration expenses (including actuarial, audit, legal, etc.); and
    - Investment management fees, to the extent they are not already reflected in the return assumptions;
- Confirmation of how the discount rate used in valuing the liabilities is affected by the economic scenario. For example, if the discount rate is linked to long-term corporate bond yields, confirmation that the discount rate is adjusted to be consistent with the forecasted scenario, and a description of how that adjustment is made;

- Rationale for any variance in and any relationships among the equity returns, inflation, bond yields, or other economic variables;
- Description of any methodology to vary the standard deviations of and correlations among economic variables;
- For the federal bond yield curve, the initial yield at one-year, 10-year, and 30-year terms;
- The initial credit spreads for provincial and investment-grade corporate bonds at the one-year, 10-year, and 30-year terms, if applicable; and
- The rationale for any trend in bond yields (including any assumption of normalization of the yield curve). [Effective July 1, 2019]

.03 For each of the model inputs listed above, the actuary would indicate material changes and reasons for changes relative to the previous valuation.

Model Outputs

.04 To assist users of the report to understand the model outputs and assess their reasonableness, the following summary of forecasted economic variables should be disclosed as a minimum:

- For inflation and all asset class returns (and wage increases if they incorporate a stochastic component different than inflation):
  - Mean of the annualized compounded value over the entire period;
  - Average annual standard deviation; and
  - Average correlation matrix among these variables over the entire period.
- For the federal bond yield curve, the mean yield at the end of the projection period at the one-year, 10-year, and 30-year terms;
- The mean credit spread for provincial and investment-grade corporate bonds at the end of the projection period at the one-year, 10-year, and 30-year terms, if applicable;
- For at least every other year over the first 10 years and at least every five years thereafter, the following distribution information for the total portfolio return after investment management fees:
  - Percentiles 5%, 25%, 50%, 75%, 95%, mean, and standard deviation; and
- The initial discount rate and mean of the discount rate at the end of the projection period. [Effective July 1, 2019]

.05 The following average forecasted key demographic summary statistics should be disclosed at a minimum of every other year for the first 10 years and every five years thereafter:

- Total number of active participants and their average age, average service, and average projected salary, if relevant;
- Total number of inactive members and the total amount of annual pensions being paid; and
- Mean total liability and active/inactive liability split. [Effective July 1, 2019]

.06 The actuary should provide the following statistics for the projected liability, projected assets, projected funded status, and any other key output from the model upon which the actuary expresses an opinion (e.g., open group funded ratio):

- Percentiles 5%, 25%, 50%, 75%, 95%;
- Mean;
- The average of those values that are below the 5th percentile of the range of values produced by the entire set of modelled scenarios or above the 95th percentile, according to which side of the distribution should be considered unfavorable. As an example, values below the 5th percentile should be expected to be used for value of assets and funded status, whereas values above the 95th percentile should be expected to be used for liabilities; and
- The corresponding average for the values below the 2.5th or above the 97.5th percentile.

These statistics should be provided as a minimum for every other year for the first 10 years and every five years thereafter. [Effective July 1, 2019]

Disclosure Statements

.07 The actuary signing a report on the stochastic modelling should include the following statements:

- While the actuary believes that the model inputs are reasonable at the time this report has been prepared, other reasonable model inputs could be used, resulting in potentially very different distributions of forecasted outcomes; and
- The disclosures in this report have been prepared in compliance with Subsection 3270, Disclosure for Stochastic Models Used to Comply with Specific Regulatory Pension Plan Funding Requirements. [Effective July 1, 2019]

.08 The actuary signing a funding report requiring stochastic modelling should provide the following statement, with appropriate reference to any separate stochastic modelling report:

- The funding valuation assumptions are consistent with the stochastic model inputs. [Effective July 1, 2019]

3300 Full or Partial Wind-up Valuation

.01 This section 3300 applies to advice that an actuary provides on the funded status or funding with respect to the wind-up, in full or in part, of a pension plan.

3310 General

.01 The actuary's advice with respect to a pension plan that is being wound-up, in full or in part, should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should take account of subsequent events up to the cut-off date. [Effective December 31, 2010]

.03 The pension plan's assets should be valued at liquidation value. [Effective December 31, 2010]

Scope

.04 This section is not intended to prescribe the manner in which:

- The pension plan's assets would be allocated between jurisdictions in the case of wind-up of a pension plan covering members in several jurisdictions;
- Benefit entitlements would be determined;
- Contributions to a pension benefits guarantee fund would be determined;
- Funding obligations would be determined; or
- The pension plan's assets would be allocated between the employer and the members or between members themselves.

.05 Rather, those issues would be determined in accordance with the law or the plan provisions, or an entity empowered thereunder to make that determination. It may be appropriate, however, to use the results of the valuation to address one or more of those issues, or to disclose their resolution in the report.

Circumstances affecting the work

.06 For the purposes of section 3300, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funded status or the funding of the pension plan, or a combination thereof;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

Cut-off date

.07 The cut-off date would be the date up to which subsequent events would be recognized in the valuation.

Partial wind-up

.08 A partial wind-up occurs when a subset of the members terminates membership in circumstances that require wind-up with respect to those members. Such wind-up does not apply to the continuing members, although it may be necessary, for legal or other reasons, also to value the benefits of the continuing members.

.09 The law regarding partial wind-ups varies by jurisdiction. As a result, the application of law can cause a partial wind-up to range from an insignificant change in the pension plan to something similar to a full wind-up.

.10 The standards for a partial wind-up are the same as the standards for a full wind-up. Their application may be easier, however, when the partial wind-up applies to relatively few members. For example:

- The standard of materiality for determination of benefit entitlements may be less rigorous for continuing members than for those to whom the partial wind-up applies; or
- The standard of materiality for reporting wind-up expenses may be less rigorous.

3320 Assumptions

.01 The actuary should select assumptions that:

- Are either best estimate assumptions or are best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the terms of an appropriate engagement;
- Are selected as at the cut-off date; and
- Reflect the expected method of benefit settlement. [Effective February 1, 2018]

.02 Unless it is expected that expenses will not be paid from the pension plan's assets, the actuary should select an explicit assumption regarding the expenses of wind-up and either offset the resulting expense provision against the pension plan's assets or add the resulting expense provision to the pension plan's liabilities. [Effective December 31, 2010]

3330 Reporting: External User Report

.01 If a previous external user report was prepared with respect to the wind-up, the actuary should describe and quantify the gains and losses between the prior calculation date and the calculation date. [Effective December 30, 2012]

.02 An external user report should:

- Include the wind-up date, the calculation date, the cut-off date, and the report date;
- Describe the events precipitating the wind-up, of which the actuary is aware, that affect the terms of the wind-up, the benefit entitlements, or the valuation results;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data, including any assumptions made about missing membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Subject to any applicable privacy legislation:
  - Include the detailed individual membership data; or
  - Include an offer to provide detailed individual membership data on request to the employer, the plan administrator, or the regulator;
- Describe the liquidation value of the assets and a summary of the assets by major category;
- Describe the pension plan's provisions, including an identification of
  - Any benefits that have been insured;
  - Any amendments made since any previous external user report with respect to the plan which affect benefit entitlements; and
  - Any subsequent events or post-wind-up contingencies, of which the actuary is aware, which affect benefit entitlements;
- Report the explicit assumption regarding the expenses of wind-up or justify the expectation that expenses will not be paid from the pension plan's assets;

- Report the funded status at the calculation date;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State that the funded status at settlement may differ from that contained in the report unless the report includes the funded status at the time of final settlement;
- State whether an updated report will be required in the future;
- If the actuary relies upon direction concerning unclear or contentious issues,
  - Describe each such issue;
  - Describe the direction relied upon or, where appropriate, a summary thereof; and
  - Identify the person providing such direction and the basis of authority of such person;
- Describe any post-wind-up contingencies that may affect the distribution of the pension plan's assets;
- Describe whether a recalculation of the value of benefit entitlements is required at settlement;
- Where a member has a choice that the member has not yet made between receiving a commuted value and a deferred or immediate pension, describe the assumptions made regarding such choice;
- If applicable, describe the method to allocate the pension plan's assets among classes of members and the method to distribute surplus;
- Describe the actuary's role in calculating commuted values, the standards for their calculation, and an opinion on whether their calculation is in accordance with accepted actuarial practice in Canada; and
- Describe the sensitivity of the valuation results to the pension plan's investment policy and to market conditions between the report date and the settlement date. [Effective March 31, 2015]

.03 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement regarding methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 30, 2012]

.04 The external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

Dates

.05 The wind-up date of the pension plan would be determined by the regulator, the plan administrator or the plan sponsor based on the plan provisions and the law.

.06 The calculation date of the funded status would usually be the wind-up date.

.07 For a particular member:

- The date of calculation of benefit entitlement would depend on the circumstances of the wind-up, the terms of the pension plan, and the law, and may be the date of termination of employment, the date of termination of membership, the wind-up date, or another date; and
- The settlement date would be the date of settlement of the member's benefit entitlement.

Nature of wind-ups

.08 The purpose of a wind-up valuation may be to determine, or to provide, the basis for determining:

- The funded status of the pension plan;
- The total value of the benefit entitlements of all members prior to taking account of the funded status of the pension plan;
- Any required additional funding;
- The amounts and methods of settlement of benefit entitlements, including any adjustment required due to a wind-up deficit; or
- The amount and method of distribution of a wind-up surplus.

.09 A wind-up may be complex and may take a long time. Delays may require a series of reports by the actuary. Since the funded status of the pension plan at the final settlement date may affect whether benefit entitlements can be settled in full, the reflection of subsequent events in each report would be critical.

.10 For example, between the wind-up date and the settlement date:

- The wind-up liabilities may fluctuate if there are fluctuations in interest rates and annuity prices;
- The pension plan's assets may fluctuate depending upon the manner in which they are invested; and
- The surplus may fluctuate if the pension plan's assets and liabilities are not matched.

.11 The actuary would usually report the value of the benefit entitlements of all members and the funded status of the pension plan. That report would be filed with the regulator for approval. After that approval, the plan administrator would settle the benefit entitlements.

.12 The actuary may prepare, or may be required to prepare, a final report after settlement of all benefit entitlements. Such report, if any, would document the distribution of the pension plan's assets by describing those entitlements and their settlement.

Membership data

.13 The membership data are the responsibility of the plan administrator. The actuary would, however, report on the sufficiency and reliability of the membership data, specifically including the commuted values used in the valuation whether or not the plan administrator was the calculator thereof.

.14 The finality of wind-up would call for the actuary to obtain precise membership data. The actuary may, if the circumstances dictate, include contingency reserves in the wind-up valuation with respect to missing members if the actuary believes that additional members still have benefit entitlements under the pension plan but their membership information is missing.

.15 The reported membership data would include details of the amounts and terms of payment of each member's benefits.

Assumptions

.16 The selected assumptions would:

- In respect of benefit entitlements that are assumed to be settled by purchase of annuities, reflect single premium annuity rates;
- In respect of benefit entitlements that are assumed to be settled by lump sum transfer, reflect the standards in section 3500 respecting commuted values; and
- In respect of benefit entitlements that are assumed to be settled in some other manner, reflect the manner in which such benefits would be settled.

.17 If future benefits depend on continued employment (e.g., the pension plan is terminating but employment is not), the actuary would consider reflecting contingencies such as future salary increases and termination of employment.

.18 If the pension plan provides special early retirement allowances that may be reduced if the members have employment income following their actual or assumed early retirement dates, then the wind-up valuation would require assumptions regarding the likelihood and the amounts of the members' future employment income. To extrapolate the pension plan's historical experience as a going concern would not necessarily be appropriate in selecting those assumptions.

.19 Wind-up expenses usually include, but are not limited to:

- Fees related to the actuarial wind-up report;
- Fees imposed by a regulator;
- Legal fees;
- Administration expenses; and
- Custodial and investment management expenses.

.20 The actuary would either net wind-up expenses against the pension plan's assets or add the assumed wind-up expenses to the pension plan's liabilities in calculating the ratio of assets to liabilities as a measure of financial security of the benefit entitlements, unless the expectation is that expenses will not be paid from the pension plan's assets. However, an exception may be made for future custodial and investment management expenses, which may be netted against future investment return in the treatment of subsequent events.

Use of another person's work

.21 Some aspects of the wind-up may be unclear to the actuary or contentious. Examples are:

- Interpretation of the law;
- The determination of the wind-up date;
- The members, former members or recently terminated members to be included in the wind-up;
- Whether or not to assume salary increases in determining benefit entitlements;
- Eligibility for plant closure benefits and permanent lay-off benefits;
- Eligibility for benefits payable only with the consent of the employer or plan administrator;
- The liquidation value of the pension plan's assets;
- The method to allocate the pension plan's assets among members;
- The allocation of surplus between the employer and the members; and
- Whether or not wind-up expenses are to be paid from the pension plan's assets.

.22 To decide those aspects, the actuary may rely upon direction from another person with the necessary knowledge, such as legal counsel or the employer, or the necessary authority, such as a regulator or the plan administrator. The actuary would consider any issues of confidentiality or privilege that may arise.

Post-wind-up contingencies

.23 Post-wind-up contingencies may affect benefit entitlements. Examples are:

- Member election of optional forms of benefits;
- Member election of retirement date;
- Salary increases; and
- Change in marital status.

Subsequent events

.24 In contrast with a going concern valuation, in a wind-up valuation all subsequent events, ideally, would be reflected. This ensures that the funded status is presented as fairly as possible as of the report date. However, it would be impossible to recognize subsequent events right up to the report date. Accordingly, the actuary would select a cut-off date that is close to the report date.

.25 The actuary would ascertain that no subsequent events have occurred between the cut-off date and the report date that would change the funded status significantly, otherwise the actuary would select a later cut-off date. For clarity, a subsequent event may be material yet not be so significant as to require selection of a later cut-off date.

.26 It may be appropriate to have more than one cut-off date. For example, the actuary may select one cut-off date for the active membership data and another cut-off date for the inactive membership data.

.27 Common subsequent events are:

- Contributions;
- Expenses paid from the pension plan's assets;
- Actual investment return on the pension plan's assets;
- Change in annuity purchase rates;
- Change in assumptions for the calculation of commuted values;
- Corrections to the membership data;
- Deaths of members; and
- Crystallization of post-wind-up contingencies.

.28 One method for taking account of subsequent events is to determine the value of benefits as of the cut-off date and then discount such value back to the calculation date at an interest rate equal to the rate of investment return, net of investment expenses, earned on the pension plan's assets between the calculation date and the cut-off date. The pension plan's assets would be determined at the calculation date, but adjusted for the subsequent events (such as contributions and non-investment expenses) that affect the pension plan's assets.

.29 There may be situations where, due to legal or practical considerations, subsequent events are not recognized, at least in a preliminary report and the cut-off date for such a report would be the calculation date. In such reports, the effect of subsequent events may be disclosed and quantified in an approximate manner. Where the effect of subsequent events is provided in a later report, it may be practical, in that report, to use a calculation date corresponding to the cut-off date.

Statements of opinion

.30 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified, but would be followed to the extent practicable.

3400 Financial Reporting of Pension Costs

.01 This section 3400 applies to advice that an actuary provides with respect to financial reporting of a pension plan's costs and obligations in the employer's or the pension plan's financial statements, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

3410 General

.01 For financial reporting purposes, the actuary should use methods and assumptions for the value of assets and pension benefit obligations that are appropriate to the basis of financial reporting in the employer's or pension plan's financial statements, as applicable, and that are consistent with the terms of an appropriate engagement and the circumstances affecting the work. [Effective May 1, 2019]

Circumstances affecting the work

.01.1 For the purposes of section 3400, the circumstances affecting the work would include

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.02 The actuary would reflect the financial reporting standards specified by the terms of the appropriate engagement. Where financial reporting standards require methods and assumptions to be established by the preparers of the financial statements, the actuary would use the methods and assumptions specified by the preparers of the financial statements.

Plan provisions

.02.1 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include, where relevant

- Current plan documents;
- Administrative practices;
- Cost-sharing arrangements; and
- Communication between the plan sponsor or plan administrator and the plan members or collective bargaining agent.

.02.2 The actuary would consider all benefits in accordance with the terms of the appropriate engagement that are to be payable under the pension plan and would include provision for all such benefits expected to be paid under the plan.

Anticipated amendment or deferred recognition of a pending amendment

.02.3 The actuary's advice on a pension plan may reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, as appropriate, based on the applicable financial reporting standard.

.02.4 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.02.5 If an actuary is aware of an expected amendment to the pension plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

Data

.02.6 In identifying the data need, the actuary would bear in mind the pertinent benefits (i.e., those applicable during retirement, disability, or following termination of employment).

.02.7 The actuary may use data, including membership data, with an effective date different from the calculation date. In extrapolating data or results, the actuary would consider actual benefit payments and other relevant events between the effective date of the data and the calculation date. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data.

Assumptions

.03 The assumptions that the actuary uses would be best estimate assumptions, unless otherwise specified in the relevant financial reporting standards or as otherwise selected by the preparers of the financial statements.

.04 Repealed

Benefit commitments

.05 The actuary would include in the valuation of pension benefit obligations the effect of a commitment to provide benefits beyond the terms of the plan to the extent stipulated by the preparers of the financial statements.

Expenses

.05.1 The actuary's advice on a pension plan would take account of expenses, including whether or not they are expected to be paid from the pension plan's assets, if any.

Extrapolations

.05.2 The actuary may extrapolate results of an earlier valuation using appropriate extrapolation techniques. The actuary would not normally extrapolate valuation results more than four years from the effective date of the membership data.

3420 Reporting: External User Report

.01 An external user report should:

- Include the calculation date and the report date;
- Describe the sources of membership data, plan provisions, and the pension plan's assets, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the market value of assets and a summary of the assets by major category;
- Describe the pension plan's provisions;
- Describe any material accounting policies relevant to the work;
- Describe any commitment to provide benefits beyond the terms of the plan reflected in the valuation of pension obligations;
- Report the funded status at the calculation date and the applicable service cost;
- Disclose any pending but definitive or virtually definitive amendment of which the actuary is aware, and whether or not such amendment has been included in determining the funded status and the service cost;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- Describe any contingent benefits provided under the pension plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
- Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost;
- Describe the method and period selected in connection with any amortizations;

- If the valuation is an extrapolation of an earlier valuation, then describe the method and any assumptions for, and the period of, the extrapolation; and
- State whether or not the valuation and/or extrapolation conforms with the actuary's understanding of the financial reporting standards specified by the terms of an appropriate engagement. [Effective May 1, 2019]

.02 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions which should usually be, "In my opinion, the assumptions are appropriate for purposes of the valuation.";
- A statement regarding calculations, which should usually be, "In my opinion, the calculations have been made in accordance with my understanding of the requirements of [name financial reporting standard]"; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective March 31, 2015]

.03 An external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the valuation. [Effective December 30, 2012]

Membership data

.04 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

.05 **Reference to report on funding**

The descriptions required in the external user report may be incorporated by reference to an external user report on funding.

3500 Pension Commuted Values

3510 Scope

.01 The standards in this section 3500 apply to an actuary's advice on the computation of commuted values, including commuted values to be paid from a pension plan that is registered under an Act when the method of settlement is a lump sum payment in lieu of an immediate or deferred pension resulting from death or individual termination of plan membership except for the specific circumstances that are described below in paragraph 3510.03. In particular, the standards in this section 3500 apply:

- In a jurisdiction whether or not there is legislation in that jurisdiction that specifically provides for portability of pension benefit credits;
- Regardless of limits imposed by the Income Tax Act (Canada) on amounts that may be transferred to other tax-sheltered retirement plans; and
- Under a reciprocal pension agreement between plan sponsors where the result of the reciprocal agreement is either to establish a pension amount determined on a defined contribution basis or to establish an account balance under a defined contribution provision of a plan, whether the account balance is to be converted immediately or subsequently into a pension.

.02 The standards in this section 3500 also apply to the determination of a lump sum payment from the pension plan in lieu of an immediate or deferred pension to which a plan member's former spouse is entitled after a division of the member's pension on marital breakdown.

.03 The standards in this section 3500 do not apply:

- Under a reciprocal pension agreement between plan sponsors where the result of the reciprocal agreement is to provide defined pension benefits for the plan member;
- To the determination of commuted values of pensions and deferred pensions payable from pension arrangements that are not registered under an Act;
- To the conversion of defined pension benefits to a defined contribution arrangement where there is no termination of active employment;
- To the determination of commuted values of pensions that have commenced payment and where commutation is at the discretion of the member, except as explicitly required under paragraphs 3510.02 or 3560.01; or
- When calculating the capitalized value of pension benefits for actuarial evidence purposes, pursuant to part 4000, where such value does not relate to a commuted value payable from a registered pension plan.

Act

.04 For the purposes of this section 3500, "Act" means a pension benefits standards act of a province or the federal government of Canada or the Income Tax Act (Canada).

Retirement Compensation Arrangements

.05 Since Retirement Compensation Arrangements (RCAs) are not required to be registered under the Income Tax Act (Canada), this section 3500 applies to commuted values payable from an RCA only if the RCA is registered under a pension benefits standards act of a province or the federal government of Canada.

3520 Method

.01 The commuted value should be independent of the funded status of the pension plan at the valuation date. [Effective April 1, 2009]

.02 The actuary should establish the period for which the commuted value applies before recomputation is required, taking into account the requirements of applicable legislation and the plan rules. Commuted values paid after the end of such period should be recomputed on the basis of a new valuation date. [Effective April 1, 2009]

.03 The commuted value should be adjusted for a reasonable rate of interest, taking into account the requirements of applicable legislation, between the valuation date and the first of the month in which the payment is made. [Effective April 1, 2009]

.04 The commuted value should reflect the plan member's full benefit entitlement as a deferred or immediate pensioner, as may be applicable, determined under the terms of the pension plan. In the case of a deferred pensioner, the commuted value should include the value of the death benefit that would have applied before commencement of the deferred pension. [Effective April 1, 2009]

.05 The actuary should not calculate a commuted value using methods or assumptions that produce a commuted value smaller than the value computed in accordance with this section 3500. [Effective April 1, 2009]

Valuation date

.06 The valuation date means the date as of which a value is being computed. Generally, this would be the date upon which the plan member becomes entitled to an immediate or deferred pension resulting from death or individual termination of plan membership, or as of such other date as may be determined either by legislation, by the plan rules, or by a plan administrator who is empowered to do so, on which the right to receive a commuted value becomes effective.

.07 In the event that recomputation is required in accordance with these standards, the actuary would establish a new valuation date. The actuary would make calculations at the new valuation date in accordance with the standards in effect on the new valuation date.

Conditions attached to payment

.08 Applicable legislation or the plan provisions may attach conditions to the payment of a portion of the commuted value when the plan is less than fully funded on a plan termination basis.

Benefit entitlement

.09 Where, at the valuation date, a plan member has the right as a deferred or immediate pensioner, as may be applicable, to optional forms of pension or optional commencement dates, and where such right is contingent on an action that is within the member's control and where it is reasonable to assume that the member will act so as to maximize the value of the benefit, the option that has the greatest value would be used in the determination of the commuted value. For example, where a member has terminated employment and, upon application, is eligible for a particular benefit that has a value, it is reasonable to assume that, upon acquiring expert advice, the member will apply for the benefit.

.10 However, where such right is contingent upon an action that is within the member's control and where it is not reasonable to assume that the member will act so as to maximize the value of the benefit, an appropriate allowance would be made for the likelihood and timing of such action. For example, where a member is continuing in employment and is entitled to an unreduced pension that commences upon termination of employment, it may not be reasonable to assume that the member will immediately terminate employment in order to maximize the value of the benefit. In determining the likelihood and timing of such action, the actuary may use group data, and the actuary would be prepared to justify the allowance that has been made.

.11 The commuted value determined by the actuary using these assumptions made in accordance with the preceding paragraphs 3520.09 and 3520.10 may prove to have recognized certain potential entitlements that are never realized, or may prove to have disregarded certain entitlements that ultimately provide value.

Alternative methods and assumptions

.12 The actuary may calculate a commuted value on methods and assumptions that differ from those prescribed in these standards only if:

- The resulting value is larger; and
- Such value is required by the plan terms or applicable legislation, or by a plan administrator who is empowered to specify the basis on which commuted values are to be determined.

3530 Demographic Assumptions

.01 Except for situations specifically noted below, the actuary should assume:

- Separate mortality rates for male and female members; and
- Mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations. [Effective February 1, 2014]

.02 No adjustment should be made to reflect the health or smoker status of the member. [Effective February 1, 2014]

.03 The current age of the plan member should be used when valuing an immediate pension. [Effective February 1, 2014]

.04 If the plan provides a contingent benefit only to the person who is the plan member's spouse at the date of termination of membership, the actual age of the spouse, if any, should be used in the computation. If this information cannot be obtained, an appropriate proportion married and age difference between the plan member and spouse should be assumed. [Effective February 1, 2018]

.05 Where the plan provides a contingent benefit to a plan member's spouse and a change in the member's marital status after the valuation date is relevant to the determination of the commuted value, the actuary should make an appropriate assumption concerning the likelihood of there being an eligible spouse, and the age of that spouse, at the time of death. [Effective February 1, 2014]

.06 When valuing deferred pensions, including deferred pensions for a plan member who may also be entitled to an immediate pension, the normal retirement age should be used, except in the situation where the terminated plan member has the right to elect an earlier commencement date and the consequent early retirement pension exceeds the amount that is of actuarial equivalent value to the pension payable at normal retirement age. The retirement age should be determined in a manner consistent with paragraph 3520.09. [Effective February 1, 2018]

.07 The demographic assumptions would be the same for all types of immediate and deferred pensions.

Mortality

.08 The actuary would calculate commuted values that do not vary according to the sex of the plan member where the actuary is required to do so by applicable legislation or by the provisions of the plan or by the plan administrator if the administrator is so empowered by the provisions of the plan. In this case, the actuary would adopt a blended mortality approach by either developing a mortality table based on a combination of male and female mortality rates, or computing the commuted value as a weighted average of the commuted value based on male mortality rates and that based on female mortality rates. The relative proportions of males versus females would be appropriate for the particular plan.

.09 If the requirement that commuted values do not vary according to the sex of the plan member is legislated and applies only to benefits earned after a particular date or only to a subgroup of plan members, the actuary may extend the use of a blended mortality approach to commuted values of benefits earned prior to such date or to commuted values of benefits of all members.

3540 Economic Assumptions

.01 The actuary should select economic assumptions that vary depending on whether the pension is fully indexed, partially indexed or non-indexed. [Effective April 1, 2009]

.02 If the valuation date is on or before January 31, 2011, the actuary should select economic assumptions that depend on the reported rates for the applicable CANSIM series for the second calendar month preceding the month in which the valuation date falls. If the valuation date is on or after February 1, 2011, the actuary should select economic assumptions that depend on the reported rates for the applicable CANSIM series for the calendar month immediately preceding the month in which the valuation date falls. [Effective April 1, 2009]

.03 The actuary should calculate two interest rates, one applicable to the first 10 years after the valuation date and the second applicable to all years thereafter. [Effective April 1, 2009]

.04 The commuted value of a fully or partially indexed pension should be at least equal to the commuted value applicable to a non-indexed pension in the same amount and having similar characteristics. [Effective April 1, 2009]

.05 The actuary should determine from the CANSIM series the following three factors.

CANSIM Series	Description	Factor
V122542	Seven-year Government of Canada benchmark bond yield, annualized (final Wednesday of month)	i_7
V122544	Long-term Government of Canada benchmark bond yield, annualized (final Wednesday of month)	i_L
V122553	Long-term real-return Government of Canada bond yield, annualized (final Wednesday of month)	r_L

Note that the factors determined above are not the reported CANSIM series, but the annualized value of the reported figure. [Effective April 1, 2009]

.06 The actuary should also determine a fourth factor, calculated as:

$r_7 = r_L * (i_7 / i_L)$ [Effective April 1, 2009]

.07 The actuary should determine the interest rates from the following:

	Non-Indexed	Indexed
First 10 Years	$i_{1\text{-}10} = i_7 + 0.90\%$	$r_{1\text{-}10} = r_7 + 0.90\%$
After 10 Years	$i_{10+} = i_L + 0.5 * (i_L - i_7) + 0.90\%$	$r_{10+} = r_L + 0.5 * (r_L - r_7) + 0.90\%$

[Effective April 1, 2009]

.08 The actuary should calculate the commuted value of a non-indexed pension using a two-tier interest rate of:

$i_{1\text{-}10}$ for the first 10 years and i_{10+} thereafter. [Effective April 1, 2009]

.09 The actuary should calculate the commuted value of a pension that is fully indexed to increases in the Consumer Price Index using a two-tier interest rate of:

$r_{1\text{-}10}$ for the first 10 years and r_{10+} thereafter. [Effective April 1, 2009]

The UP-94 Table and Projection Scale AA were published in the Transactions of the Society of Actuaries, Volume XLVII (1995).

.10 For pensions that are partially indexed to increases in the Consumer Price Index, the actuary should determine the implied rates of increase in the Consumer Price Index in the first 10 years and thereafter that make the above assumptions for non-indexed and fully indexed pensions internally consistent. The actuary should then determine the rates of pension escalation that are produced by applying to those implied rates of increase in the Consumer Price Index the partial indexing formula of the plan. The actuary should determine the adjusted interest rates applicable to partially indexed pensions by appropriately reducing on a geometric basis the non-indexed rates of interest to reflect the rates of pension escalation. [Effective April 1, 2009]

.11 Where increases in pensions are related to increases in the average wage index, the actuary should assume that the average wage index will increase at rates that are one percentage point higher than the implied rates of increase in the Consumer Price Index. [Effective April 1, 2009]

.12 A pension that is indexed according to an excess interest approach involves increases that are linked to the excess of formula A over formula B, where A is some proportion of the rate of return on the pension fund or on a particular class of assets, and B is a base rate or some proportion of the rate of return on another asset class. In determining the interest rates under formula A and formula B, the actuary should use the interest rate applicable to a non-indexed pension as a proxy for the rate of return on the pension fund or on any particular asset class for which the rate of return is expected to be equal to or greater than the non-indexed interest rates determined in accordance with paragraph 3540.07. [Effective February 1, 2018]

.13 Prior to calculating the commuted value, the actuary should round the rates of interest determined in accordance with this subsection 3540 to the nearest multiple of 0.10%. The actuary should round only the interest rates to be used in the calculation of the commuted value. The actuary should not round any rates of interest, increase or escalation used in calculations prior to the final step of the determination. [Effective February 1, 2018]

Pension index frequency

.14 For an indexed pension, the actuary would apply the indexed interest rates as determined above without adjustment only if the frequency of indexing is equal to the payment frequency. Reasonable approximations may be used to calculate an adjustment that takes into account the specific circumstances of the situation regarding payment frequency, indexing frequency, and time and amount of the first increase.

Pension indexed on an excess interest formula

.15 If the pension is indexed on an excess interest formula and the particular asset class is one for which the rate of return is expected to be less than the non-indexed interest rates determined in accordance with paragraph 3540.07, the actuary would appropriately reduce the rate of interest to reflect the actuary's expectation of the difference between the non-indexed interest rates determined in accordance with paragraph 3540.07 and the rate of return on the particular asset class. In determining the expected rate of return on a particular asset class for this purpose, the actuary would be guided by the current economic environment as well as long-term historical experience.

Other modifications

.16 Where benefit adjustments are based on one of the above approaches but are either modified by applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years, or modified by prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease in pension, the actuary would adjust the interest rates otherwise applicable, based on the likelihood of the modification causing a material change in the pension payable in any year. In determining such likelihood, the actuary would be guided by the current economic environment as well as long-term historical experience. The actuary would be prepared to justify any such adjustment or lack of adjustment to the interest rates.

.17 Where increases in benefits are not determined by reference to increases in the Consumer Price Index, the actuary would ensure that the commuted value is not inconsistent with the values of non-indexed pensions and fully indexed pensions.

Alternative calculation method

.18 For pensions that are either fully or partially indexed, rather than using the implicit approach described above, the commuted value may be determined explicitly by indexing each expected payment based on the indexing rate that makes the assumptions for non-indexed and fully indexed pensions, prior to rounding under paragraph 3540.13, internally consistent.

3550 Disclosure

.01 When communicating the amount of the commuted value of a member's pension, the actuary should provide:

- A description of the benefit entitlements involved;
- A description of the actuarial assumptions used in determining the commuted value and the rate of interest to be credited between the valuation date and the date of payment;
- A statement of the period for which the commuted value applies before recomputation is required;
- When the payment of a portion of the commuted value is subject to a condition based on the funded status of the plan, the additional contribution required for the payment of the full commuted value to be made or the recommended schedule for payment of the balance of the commuted value, if applicable; and
- A statement as to whether the commuted value has been computed in accordance with these standards. [Effective February 1, 2018]

.02 Where the commuted value has not been determined in accordance with these standards, the actuary should clearly state that the calculation is not in compliance with these standards and disclose all areas of noncompliance and the reasons for the noncompliance. [Effective April 1, 2009]

.03 When communicating to the plan administrator an actuarial basis to be used in determining commuted values, the actuary should provide a statement that the actuarial basis is in accordance with these standards. [Effective February 1, 2018]

Disclosure of plan values which differ from these standards

.04 In a situation where the use of commuted values (called plan values in this subsection 3550) that are different from those computed in accordance with this section 3500, is required by the plan terms or applicable legislation, or by a plan administrator who is empowered to specify the basis on which commuted values are to be determined, the following disclosure requirements are applicable:

- If the plan values are lower, the actuary should disclose that the commuted values so calculated are in accordance with the plan or the applicable legislation but not in accordance with the standards; or
- If the plan values are higher, the actuary should disclose that the commuted values so calculated are in accordance with the plan or the applicable legislation and the standards. [Effective February 1, 2018]

.05 Where the actuary is required to calculate commuted values that do not vary according to the sex of the plan member, and where that requirement applies only to benefits earned after a particular date or only to a subgroup of plan members, the actuary should describe the extent to which the actuary's blended mortality approach has been extended to benefits earned before the particular date or to benefits of all members. [Effective April 1, 2009]

.06 Where the actuary uses assumptions or methods described in these standards to calculate a commuted value in a situation where these standards does not apply, the actuary should not state or imply that the commuted value has been computed in accordance with these standards. [Effective February 1, 2018]

3560 Reduced Life Expectancy

.01 The standards in this subsection 3560 applies to an actuary's advice on the computation of commuted values, from a registered pension plan, where the right to receive the lump sum is based on subsection 51.1 of the regulations to the Ontario Pension Benefits Act. These standards may also be applicable in other directly comparable situations.

.02 These standards do not apply where the right to receive a lump sum is not conditional upon medical certification, under legislation or plan provisions, even if the former member is known to be terminally ill.

.03 All standards set out in preceding subsections of section 3500 apply, except as superseded by the following recommendations.

.04 The commuted value should be calculated as of the date of the medical certificate specifying that the former member has life expectancy less than two years, even if other conditions for payment of the benefit (such as spousal consent) are not met until a later date. [Effective April 1, 2009]

.05 The commuted value should be adjusted for interest and benefits paid to the date of payment. [Effective April 1, 2009]

.06 The computation should not be adjusted to reflect the actual death or change in health of the former member after the valuation date. However, if a former pension plan member becomes eligible for immediate commencement of a pension after the date of the medical certificate and prior to payment of the benefit, this eligibility should be reflected in the calculation. [Effective April 1, 2009]

.07 If the former member is entitled to a commuted value transfer based on plan provisions or legislation that is not conditional on reduced life expectancy, the amount payable should be the greater of the amount calculated in accordance with this subsection 3560 and the amount computed in accordance with subsections 3520 through 3540 without regard to shortened life expectancy. [Effective April 1, 2009]

Benefit Entitlement

.08 The commuted value would reflect the plan member's full benefit entitlement as a deferred or immediate pensioner, as may be applicable, determined under the terms of the pension plan.

There are three possible cases:

(a) a former member with deferred pension entitlement, not eligible for immediate commencement of pension.

In this case, the commuted value would reflect the present value of the death benefits that would be payable in respect of the former member. For this purpose, the value of the death benefit would be calculated as of the valuation date, assuming the former member died as of the valuation date.

(b) a former member with deferred pension entitlement, eligible for immediate commencement of pension.

In this case, the lump sum value would be the greater of the amount determined as in (a) above and a value determined as if the member had retired at the date of valuation and elected the most favourable combination of the highest surviving spouse pension permitted by the plan (if there is an eligible spouse) and the longest guaranteed period available under the plan. This value would be determined as for pensioners in (c) below.

(c) a former member in receipt of pension.

In this case, the commuted value would reflect the present value of pension payments for a period certain of four months from the valuation date, any additional guaranteed payments and any survivor benefits potentially payable.

Disclosure

.09 When communicating the amount of the commuted value of a member's pension, the actuary would also provide a description of the survival period assumption.

4000—Actuarial Evidence

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4100Scope

.00 Part 1000 applies to work within the scope of this part 4000.

.01 The standards in part 4000 apply to actuarial evidence work.

.02 With respect to actuarial evidence work:

- An expert is an actuary who is qualified by knowledge, skill, experience, training, or education to render an opinion or otherwise testify concerning the matter at hand; and
- An expert opinion is a conclusion drawn from actuarial knowledge and experience or from the application of one or more actuarial methods to a body of data.

.03 An expert opinion may be provided in a written report, oral or written testimony, or both.

.04 The provision of an expert opinion which is actuarial evidence work and which involves a practice area such as insurance or pensions is work in both that practice area and the actuarial evidence practice area. The actuary would refer to the standards applicable to that practice area, in addition to the standards in part 4000.

Examples

.05 Examples of actuarial evidence work are:

- Determination of the capitalized value of pecuniary losses arising as a result of an event such as personal injury, death, or wrongful dismissal from employment;
- Determination of capitalized values of pensions in marriage breakdown proceedings;
- Expert opinions given in litigation arising from work completed in respect of a pension plan or an insurance business;
- Work as an expert advisor to a mediating official, such as a judge;
- Determination of effective rates of interest in cases of alleged charging of criminal interest rates; and
- Provision of an expert opinion with respect to another actuary's work that is being challenged or in cases of alleged professional negligence.

.06 Work in a practice area, such as insurance or pensions, may be performed in an adversarial environment but not involve an anticipated expert opinion for a dispute resolution proceeding. Such work would not normally be considered to be actuarial evidence work. Examples of such work, where the standards in part 4000 are not applicable, are:

- Pension plan valuations or costings related to union negotiations, or actuarial assistance with the merger of pension plans or the valuation of a pension plan in connection with the sale of a business; and
- Actuarial assistance with the valuation of an insurer, the merger of insurers, or the acquisition of an insurer.

Fact evidence

.07 The standards in part 4000 do not apply to the work of an actuary who is providing only fact evidence, and not an expert opinion. For example, an actuary testifying in his or her own defense in a proceeding related to professional negligence would normally be providing fact evidence, and not an expert opinion. As another example, an actuary may be providing evidence in a dispute resolution proceeding regarding his or her involvement in work performed in a practice area such as insurance or pensions. If the circumstances were not adversarial and there was no anticipation of a dispute resolution proceeding at the time the work was performed, the actuary's evidence in the dispute resolution proceeding would normally be fact evidence and not an expert opinion. The standards in part 4000 would apply, however, if the actuary's role includes providing an expert opinion in a dispute resolution proceeding, where such opinion is expected or required to be independent.

Litigation advice

.08 The terms of an appropriate engagement may require that the actuary provide only litigation advice, other than an expert opinion that is expected or required to be independent, such as assisting counsel or a client in identifying and analyzing legal or actuarial issues, advising in connection with relevant case law, and preparing for cross-examination of opposing witnesses. In such cases, provided that the actuary makes it clear that the work product does not represent an expert opinion that is actuarial evidence work, the standards in part 4000 would not apply.

.09 The terms of an appropriate engagement may require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion. If work related to the expert opinion meets the definition of actuarial evidence work, then the standards in part 4000 would apply to that aspect of the engagement.

Additional guidance

.10 Repealed

4200 General

4210 Circumstances affecting the work

.01 When performing actuarial evidence work, the actuary should take into account the circumstances affecting the work. [Effective February 1, 2018]

.02 The circumstances affecting the work would include:

- Relevant legislative or regulatory provisions;
- Rules of civil procedure and rules of court in the relevant jurisdictions;
- Other rules that may be applicable to the dispute resolution proceeding;
- Established legal principles relevant to the work; and
- Terms of an appropriate engagement under which the work is being performed.

.03 Relevant legislative or regulatory provisions may include:

- Provisions relating to allowable pecuniary damages under automobile insurance legislation or regulations;
- Provisions related to division of assets under a marital property act or regulations; and
- Provisions relating to pensions, benefits, insurance, or workers' compensation.

.04 Rules of civil procedure and rules of court, as well as other rules that may be applicable to the dispute resolution proceeding, may include:

- Mandated assumptions;
- Required content and format of reports;
- Role of experts; and
- Duties and obligations of experts.

.05 Established legal principles relevant to the work may address:

- Issues relevant to the actuary's engagement; and
- Role and obligations of experts.

.06 The terms of an appropriate engagement would define the role of the actuary and the purpose, context, and scope of the work. An engagement for actuarial evidence work would not be appropriate if it would impair the ability of the actuary to perform independent and objective work.

.07 Significant terms of an appropriate engagement may stipulate one or more of:

- Assumptions to be used in the actuary's work;
- Methods to be used in the actuary's work; and
- Various scenarios to be considered by the actuary.

.08 An engagement may be appropriate if its terms require that the actuary assist his or her client or counsel with challenging the application or a particular interpretation of existing law, regulation, court practice, or established legal principles relevant to the work. Nothing in part 4000 is intended to prevent the actuary from assisting with a challenge of the application or a particular interpretation of existing law, regulation, court practice, or established legal principles relevant to the work, even if the result of such challenge of the application or a particular interpretation would otherwise, in the opinion of the actuary, be inconsistent with accepted actuarial practice.

4220 Financial interest of the actuary

.01 The amount of the actuary's compensation should not be related to the outcome of the matter (e.g., dispute resolution proceeding) in connection with which the work is done. [Effective December 31, 2013]

.02 For example, contingency fees that depend on the outcome of the dispute resolution proceeding would not be appropriate.

4230 Role as expert

.01 The actuary's actuarial evidence work should be independent and objective. [Effective December 31, 2013]

.02 The actuary's role as an expert should be to assist the court or other entity in the dispute resolution proceeding in its search for truth and justice, and the actuary should not be an advocate for one side of the matter in dispute. [Effective December 31, 2013]

.03 Where the terms of the engagement require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion that is actuarial evidence work, the litigation advice role should not influence the independence and objectivity of such expert opinion. [Effective December 31, 2013]

.04 Where the actuary is providing both litigation advice that is not actuarial evidence work and an expert opinion that is actuarial evidence work, the actuary would have a clear understanding of the differences between the two roles included in the engagement. The actuary would clearly identify in any work product which component of the engagement is involved, and would ensure that the litigation advice role does not impair his or her ability to perform the actuarial evidence work.

4240 Testimony

.01 The actuary's testimony should be independent, objective, and responsive. [Effective December 31, 2013]

.02 Where the terms of the engagement require that the actuary provide both litigation advice that is not actuarial evidence work and also an expert opinion that is actuarial evidence work, the actuary should be aware that full disclosure of all work and work products with respect to both roles within the engagement may be required in any testimony. [Effective December 31, 2013]

.03 In the course of providing testimony in the dispute resolution proceeding, the actuary should:

- Present a balanced view of the factors surrounding the actuarial aspects of the questions put to him or her;
- Answer all the questions that are asked on the basis of his or her own best assessment of all the relevant factors;
- Apply best efforts to ensure that the evidence is clear and complete, that the information the actuary is providing will not be misunderstood or misinterpreted, and that the audience will be able to utilize it correctly; and
- Indicate when a particular issue or question falls outside his or her expertise. [Effective December 31, 2013]

.04 The actuary should respond truthfully and fully to questions posed in the course of providing testimony, but the actuary need not volunteer information which is beyond the scope of the question posed. [Effective December 31, 2013]

.05 Testimony is the actuary's communication presented in the capacity of an expert witness in any dispute resolution proceeding where the actuary is examined or cross-examined. Such testimony may be oral or written, direct or responsive, formal or informal.

.06 When responding to a direct question relating to any error or shortcoming the actuary perceives in the report of another actuary or expert witness, the actuary would respond truthfully and fully, notwithstanding paragraph 4710.08.

4250 Capitalized Values

.01 The actuary should calculate the capitalized value of future amounts payable in respect of an individual utilizing the actuarial present value method. [Effective December 31, 2013]

.02 Actuarial evidence work frequently deals with the determination of the capitalized value of amounts for purposes of a dispute resolution proceeding. These amounts are often payable in respect of an individual and sometimes in respect of a group of individuals. Such calculations must often be performed within a framework established by law, regulation, and/or legal precedent.

.03 Payment of the capitalized value is an alternative to payment of defined amounts to which an individual is entitled. Often the courts and others have recourse to require payment of a capitalized value when payment of the defined amounts comprising that value is not practical or not desired.

.04 Calculation of the capitalized value is within the domain of actuarial practice.

.05 The actuary would not calculate the capitalized value of future amounts that are subject to any contingent event as the present value of an annuity certain. For example, when utilizing the actuarial present value method in respect of a life annuity, the capitalized value of each life annuity payment is weighted by the probability of survival to the date of that payment. Under this method, the present value of possible overcompensation in an individual circumstance is balanced by the present value of possible undercompensation.

4300Actuarial Evidence Calculations, Other than Capitalized Value of Pension Plan Benefits for a Marriage Breakdown and Criminal Rate of Interest

4310 Scope

.01 The standards in section 4300 apply to an actuary's advice when performing actuarial evidence calculations, other than for the capitalized value of pension plan benefits for a marriage breakdown and for a criminal rate of interest.

4320 Assumptions and methods

.01 The assumptions and methods selected by the actuary should be appropriate in the aggregate, taking into account the purpose of the work and the parts of the standards that are applicable to the actuary's work. [Effective December 31, 2013]

.02 The assumptions selected by the actuary should be best estimate assumptions, unless it is appropriate to incorporate margins for adverse deviations in accordance with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should ensure that any assumptions stipulated by the terms of the engagement are plausible. [Effective December 31, 2013]

.04 The assumptions and methods used by the actuary should take account of the circumstances affecting the work, including applicable law, regulation, court practice, and established legal principles relevant to the work. [Effective February 1, 2018]

.05 The assumptions and methods selected by the actuary should not be influenced by the party to the dispute resolution proceeding that has retained the actuary. [Effective December 31, 2013]

.06 Examples of the circumstances affecting the work where it would be appropriate to incorporate a margin for adverse deviations in an assumption include, but are not limited to:

- The assumption or the requirement for a margin for adverse deviations is mandated by law, regulation, court practice, or established legal principles relevant to the work; and
- The actuary's work relates to a practice area such as insurance or pensions, and the standards for that practice area require or permit the inclusion of a margin for adverse deviations for such work.

.07 Notwithstanding paragraph 4320.03, the terms of an appropriate engagement may stipulate assumptions that are not considered plausible by the actuary or methods that are not considered appropriate by the actuary. In such case, if the actuary performs the work in accordance with the terms of the engagement, the actuary would report the deviation from accepted actuarial practice in Canada.

.08 The terms of the engagement may require that the actuary complete calculations for related items, such as one calculation for the capitalized value of a pecuniary loss and another calculation for the income tax gross-up. The underlying assumptions would be consistent for the calculation of these related items. In this example, the actuary would utilize the same underlying assumptions, such as the same real rate of interest, the same rate of price inflation, and the same mortality assumption, for both the calculation of the capitalized value of the loss and the calculation of the income tax gross-up.

.09 Where there are insufficient data to support a particular assumption regarding a contingency incorporated in the actuary's work, the actuary may present a range of results.

4330 Contingencies

.01 The actuary should consider incorporating any contingency where, in the actuary's opinion, there are adequate legal, theoretical, or empirical grounds to justify this. The actuary should disclose the omission from the work of any contingencies he or she considers material. [Effective December 31, 2013]

.02 If the actuary gives advice on the effect of a specific contingency, that advice should be based on an assessment of that contingency, both alone and in combination with other factors, using appropriate actuarial methods. [Effective December 31, 2013]

.03 Where the actuary has prepared results under more than one scenario, the actuary's report would show the results of the actuarial calculations separately for each scenario and identify which contingencies have been incorporated in each scenario. For example, the results of the actuarial calculations under one scenario may include precise recognition of only net investment return and mortality. The results taking into account any other provision for contingencies would be prepared under another scenario and would be reported separately.

.04 Recognition of a contingency may create a positive or negative effect on a calculation.

4340 Application of law

.01 In a situation where law, regulation, court practice, or established legal principles relevant to the work mandates that a method or assumption be adopted in an actuarial evidence calculation, a broad interpretation of accepted actuarial practice in Canada is appropriate, so that in most such situations the law, regulation, court practice, or established legal principles relevant to the work would be considered to be within the range of accepted actuarial practice in Canada.

.02 Repealed

.03 Where an assumption is mandated by law, regulation, court practice, or established legal principles relevant to the work, such assumption may be outside of the range of assumptions that the actuary considers to be reasonable.

4400Capitalized Value of Amounts Other than Pension Plan Benefits for a Marriage Breakdown

4410 Scope

.01 The standards in section 4400 apply to an actuary's advice when calculating the capitalized value of amounts other than pension plan benefits for a marriage breakdown. A capitalized value relates to amounts payable at various times, each amount subject to various contingencies related to the individual or to the individual's dependants. Examples of situations where capitalized values may be calculated are:

Event	Capitalized Value of:
Disability	individual's loss of earnings, loss of household services, and/or cost of extraordinary expenses attributable to the disability.
Death	dependant's loss of financial support and/or loss of household services.
Wrongful dismissal	individual's loss of earnings, pension benefits, and/or employer-sponsored benefits other than pensions.
Marriage breakdown	individual's support obligations.

4420 Assumptions and methods

Past loss

.01 In some cases, the capitalized value is the present value of amounts payable both before and after the date at which the capitalized value is established. For example, in an accident caused by negligence, litigation of the damages may result in the capitalized value becoming payable several years after the accident. Then the damages consist of those in respect of both the period before and the period after the date at which the capitalized value is established, called "past losses" and "future losses", respectively.

Income tax

.02 Subject to the terms of the engagement, the actuary may include an appropriate allowance in the capitalized value calculation for the expected effect of income tax, taking account of applicable law, regulation, court practice, and established legal principles relevant to the work. The actuary's report would deal with income tax in an internally consistent way, and the report would fully disclose the assumptions and methods utilized.

Investment expenses

.03 Subject to the terms of the engagement, the actuary may include an appropriate allowance in the capitalized value calculation for any expenses expected with respect to the future investment, management, or administration of any settlement amount, taking account of applicable law, regulation, court practice, and established legal principles relevant to the work. The actuary's report would deal with such investment expenses in an internally consistent way, and the report would fully disclose the assumptions and methods utilized.

4500 Capitalized Value of Pension Plan Benefits for a Marriage Breakdown

4510 Scope

.01 The standards in this section 4500 apply to an actuary's advice when the capitalized value of a pension plan's benefits is needed for calculating the value of family property at the breakdown of the marriage of a plan member.

.02 For the purposes of this section 4500, "plan" means "pension plan" and is broadly defined, including not only a plan that is registered under the federal Income Tax Act but also an unregistered plan, such as a retirement compensation arrangement and an unfunded pension plan.

.03 The standards in this section 4500 do not apply when the purpose of the calculation is to calculate an amount, in respect of a pension benefit, to be paid:

- By the plan to the plan member or beneficiary as a result of the plan member's death or termination of membership; or
- By a party other than the plan in connection with litigation other than in respect of a marriage breakdown.

.04 The standards in this section 4500 may provide useful guidance for similar calculations for other deferred compensation arrangements, such as a partnership retirement buy-out agreement, a sick leave buy-out plan, and a retirement lump sum allowance, but they do not provide useful guidance for current compensation arrangements such as group life and disability insurance.

.05 The standards in this section 4500 do not apply when applicable legislation mandates a different basis for the calculation of the value of a pension for family property purposes at the breakdown of the marriage of a plan member.

4520 Method

.01 The benefits to be valued are the plan's benefits in respect of the member (including survivor benefits vested in the member's spouse) at the calculation date or calculation dates. [Effective January 1, 2004]

.02 The value of the member's benefits is the capitalized value of the benefits to be valued, but assuming that the member has no spouse. The value of the survivor benefits vested in the member's spouse is the excess, if any, of the capitalized value of the benefits to be valued over the value of the member's benefits. [Effective January 1, 2004]

Principle

.03 The capitalized value would conform to the intent of applicable family law. The capitalized value may, thus, differ from the corresponding transfer value from a registered pension plan. Transfer values typically include only unconditional rights, whereas property under family law typically includes both vested and contingent rights. Thus, such contingent rights as early retirement rights, bridging benefits, and ad hoc inflation adjustments are property to be considered in a calculation for marriage breakdown purposes.

.04 The standards in this section will often produce more than one result, by taking account of alternative possibilities for:

- Pension commencement age;
- Future increases in accrued benefits before and after retirement;
- Allocation of value earned before marriage;
- Inclusion or exclusion of non-vested benefits; or
- Special circumstances, such as buy-back or transfer of benefits.

.05 If the actuary has reason to believe that the plan's financial position is so weak that payment of the capitalized benefits is doubtful, then the actuary would so report, making clear that allowance for this factor could significantly reduce the present values calculated, given that such present values have been calculated assuming that the plan would meet its obligations. In making that assessment, the actuary would take into account any benefits payable under provincial pension guarantee legislation. The actuary would take into account further the extent to which plan benefits are provided through a retirement compensation arrangement and/or an unfunded pension plan.

.06 The terms of the actuary's engagement may determine some or all of:

- The relevant law or jurisdiction;
- The calculation date or calculation dates;
- Retirement age, but only if established as a matter of fact pursuant to an agreement of the parties or a determination by the court; and
- Inclusion or exclusion of the effect of income taxes.

Benefits to be valued

.07 The benefits to be valued would include all of the plan's contractual benefits, including pre- and post-retirement death benefits, and any contractual inflation protection and non-contractual inflation protection.

.08 The benefits to be valued would exclude spousal survivorship benefits, except to the extent that these may have vested upon retirement prior to the calculation date.

.09 The form of plan benefits that would be valued would be the most favourable of any optional form available to the member with no spouse. For example, a 15-year guaranteed pension option would have a greater value than a five-year guaranteed pension option for a member with impaired mortality. However, if the applicable law disregards a particular optional form of plan benefit, then the actuary may omit that option in calculating the capitalized value.

.10 The benefits may include or exclude any non-vested benefits. Non-vested benefits may be included in the values, or may be illustrated separately, and would be valued without discount for the possibility of future forfeiture. Separately from the illustrated values, the report may contain comments including suggestions for recognizing the contingent nature of non-vested benefits. The references in this paragraph to inclusion of values of non-vested benefits apply in jurisdictions where the inclusion of such values depends on the plan provisions applicable to a deferred vested member. In other jurisdictions, the inclusion of such values depends on the extent to which continued employment is assumed.

.11 The capitalized values would include ancillary benefits that are provided by the plan as of the calculation date and are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, such as unreduced early retirement benefits.

.12 The actuary would disclose whether or not the benefits valued include benefits that will be provided by the plan after the calculation date and that are expected to become available to the member after the calculation date if the plan member continues as an active member of the plan, but are not available to the member as of the calculation date, for example:

- A future increase in benefits as a result of a collective bargaining agreement; or
- A future increase in benefits as a result of an adopted plan amendment.

.13 The benefits referred to in paragraph 4520.11 are those payable by the plan as a going concern, and not those payable on plan wind-up, if different, unless the plan has been fully wound up or partially wound up with respect to the plan member.

.14 Where various legal interpretations for a specific question appear possible, the actuary would obtain clarification of such unclear matters from the instructing lawyer or from another authoritative source. If that is not possible, the actuary would advise that various interpretations exist, and would report the effects of these interpretations or report values that, in the actuary's opinion, are most consistent with accepted actuarial practice.

Calculation date

.15 The calculation date may be single or multiple, depending on the circumstances and applicable law. The possibilities include:

- The date of separation;
- The date of marriage or commencement of cohabitation;
- The date of trial; and
- The report date.

.16 If the use of an alternative calculation date, close to the calculation date, would significantly affect the capitalized value, then the actuary would so report. Examples are:

- The date at which the member becomes eligible for early retirement with unreduced benefits; and
- The date at which the plan is amended to enhance its benefits.

Applicable standards

.17 The applicable standards are those in effect at the calculation date. If there are two or more calculation dates, however, and if the standards applicable to one differ from the standards applicable to another, then the actuary would use the same standards for all calculation dates. The choice of standards would be governed by the latest of the calculation dates, except that the choice would be governed by the base calculation when the actuary selects an alternative calculation date, close to the calculation date, in accordance with the previous paragraph.

Future service

.18 If the member's employment terminated before the calculation date and was not reinstated at the report date, then the actuary would include nothing in the capitalized value on account of assumed service after the calculation date, even if reinstatement is possible after the report date. The actuary may, however, report a useful alternative calculation that assumes reinstatement.

.19 If the member's employment terminated between the calculation date and the report date and was not reinstated at the report date, then the actuary may, with disclosure, exclude from the capitalized value any non-vested benefits forfeited by the termination of employment.

Effect on capitalized value of minimum benefits

.20 In calculating the capitalized value, the actuary would take account of any minimum benefit related to member contributions, for example:

- The so-called "50% minimum employer contribution rule"; and
- A minimum benefit equal to the member's contributions accumulated with interest.

.21 The minimum benefit would not necessarily be limited only to the value determined on a termination of employment assumption. The capitalized value would incorporate the relevant minimum benefit rule according to the event.

Effect on capitalized value of salary increases after the calculation date

.22 If the pension is an earnings-related benefit, then the possibilities are:

- The capitalized value takes account of all the member's salary increases—general increases, promotional increases, and seniority increases—after the calculation date;
- The capitalized value takes account of the member's salary increases that result from general (as opposed to promotional and seniority) salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of promotions or seniority increases that the member earns after the calculation date;
- The capitalized value does not take account of the member's salary increases after the calculation date. A rationale for this possibility is that the member's spouse has no entitlement to the effect of salary increases, which depend on the member's continued employment after the calculation date.

.23 The assumed salary increases after the calculation date would be consistent with the prescribed economic assumptions, except that salary increases revealed by subsequent events would be substituted for the corresponding assumed increases.

Effect on capitalized value of non-contractual indexing of pensions and other benefit adjustments

.24 In calculating the capitalized value, the actuary would assume continuance of the plan's established practice or current policy, if any, for non-contractual indexing for inflation of pensions after pension commencement age and of vested deferred pensions before pension commencement age, unless there is explicit reason not so to assume. The actuary would report:

- The established practice or current policy; and
- The indexation assumption.

.25 If that assumption is doubtful, then the actuary would also report the numerical effect on the capitalized value of helpful alternative assumptions.

.26 In the case of a final or best average earnings plan, there would be no allowance made for indexing of vested deferred pensions before pension commencement age in the period for which salary increases are projected after the calculation date.

Effect on capitalized value of income tax

.27 Income tax may be taken into account in the calculation. If it is to be taken into account, then the actuary would do so by calculating the average income tax rate based upon the member's anticipated retirement income computed in "current" dollars, including accrued and projected future pension income, Canada Pension Plan, Old Age Security, and other anticipated income, and continuance of the tax environment at the report date or the calculation date; i.e., assuming continuation of the existing tax rates, brackets, surtaxes, and clawbacks, applied to the projected income on retirement expressed in "current" dollars. The actuary would disclose which date was used and if the tax environment is as at the report date, would disclose the use of any tax provisions that have not yet been enacted.

.28 The actuary may report useful alternative calculations that take income tax into account.

4530 Assumptions

.01 The actuary should select all assumptions, except those depending upon interpretation of applicable law. [Effective January 1, 2004]

Mortality rates

.02 The actuary should assume mortality rates in accordance with a mortality table promulgated from time to time by the Actuarial Standards Board for the purpose of these calculations, modified, if appropriate, to reflect the member's or the member's spouse's impaired health, if medically determinable. [Effective January 1, 2012]

.03 Tobacco use (or lack of tobacco use) would not, in itself, be sufficient reason to modify the mortality rates identified above.

.04 Use of unisex mortality rates would not be appropriate except that it may be appropriate in situations where the plan member has terminated employment and has elected, or has the option to elect, a transfer value that was or would be calculated under a unisex basis.

Retirement age

.05 If the retirement age is a matter of fact (i.e., one agreed by the parties or determined by the court), then the actuary would report the selection of the assumed retirement age as such.

.06 The retirement of the member before the report date does not necessarily preclude assumption of a different retirement age.

.07 Unless paragraph 4530.05 applies, the actuary would usually assume and report the results for a range of useful retirement ages, based on data at the calculation date, which would include:

- The earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member's service ceases at the calculation date;
- The earliest age at which the member is entitled to a pension whose amount is not reduced on account of early retirement, assuming that the member continues in service either to that age or to an earlier age after the calculation date;
- If there is an upper limit to the number of years of credited service, the earliest age at which the member has attained, or will attain, that upper limit and becomes entitled to a pension whose amount is not reduced on account of early retirement; and
- The normal retirement age.

Economic assumptions

.08 The actuary should select economic assumptions that depend on the reported rates for the applicable CANSIM series for the calendar month immediately preceding the month in which the calculation date falls. [Effective January 1, 2012]

.09 The actuary should determine from the CANSIM series the following four factors:

CANSIM Series	Description	Factor
V122487	average long (>10 yrs) Government of Canada bond yields (final Wednesday of month)	G_L
V122544	long-term Government of Canada benchmark bond yield, annualized (final Wednesday of month)	b_L
V122553	long-term Government of Canada real return bond yield, annualized (final Wednesday of month)	r_L
$(1 + b_L)/(1 + r_L) - 1$	break-even inflation rate	BEIR

Note that the factors determined above do not reflect the reported CANSIM series, but the annualized value of the reported figure. [Effective January 1, 2012]

Inflation and indexing

.10 The actuary should calculate the projected benefit obligation for a pension that is fully indexed to increases in the Consumer Price Index using an assumed inflation rate of EI. For pensions that are partially indexed to increases in the Consumer Price Index, the actuary should derive inflation rates in a like manner by applying to the stipulated inflation rates the partial indexing formula of the plan. [Effective January 1, 2012]

.11 The actuary should determine the assumed rate of inflation EI as:

- First 20 years $EI_{0\text{-}20}$ = BEIR
- After 20 years EI_{20+} = 2.25%

EI should be rounded to the nearest multiple of 0.01%. [Effective January 1, 2012]

.12 Where increases in pensions are related to increases in the average wage index, the actuary should assume that the average wage index will increase at rates that are one percentage point higher than EI. [Effective January 1, 2012]

.13 The capitalized value of a fully- or partially-indexed pension should be at least equal to the capitalized value applicable to a non-indexed pension in the same amount and having similar characteristics. [Effective January 1, 2012]

.14 Where the plan so provides, the indexing in any of the above arrangements may be modified by:

- Applying a maximum or minimum annual increase, with or without carry forward of excesses or deficiencies to later years; or
- Prohibiting a decrease in a year where the application of the formula would otherwise cause a decrease.

The actuary would then adjust the expected inflation rate for a year to reflect the probability and extent of modification for that year.

.15 If the pension is indexed using an “excess investment return” approach, the expected indexation rate would be determined using the “floor rate” and the interest rates determined in accordance with paragraph 4530.18 to produce an expected indexation rate consistent with excess interest situations.

.16 For a pension in a plan that has a policy or a history of indexing on an ad hoc basis, the actuary would determine an indexation rate consistent with the indexing policy or history.

Interest rates

.17 The actuary should calculate two interest rates, one applicable to the first 20 years following the calculation date, and the second one applicable to all years thereafter. [Effective January 1, 2012]

.18 The actuary should determine the interest rates as:

- First 20 years $i_{0\text{-}20} = G_L + 0.50\%$
- After 20 years $i_{20+} = 5.50\%$

Prior to calculating the capitalized value, the actuary should round the rates of interest determined in accordance with this paragraph to the nearest multiple of 0.1%. [Effective January 1, 2012]

.19 The actuary should calculate the capitalized value of a pension using a two-tier interest rate of:

- $i_{0\text{-}20}$ for the first 20 years; and
- i_{20+} thereafter. [Effective January 1, 2012]

Assumptions selected by client

.20 The actuary would obtain instructions from the client with respect to assumptions dependent upon the interpretation of applicable law.

.21 The actuary would report his or her reliance on an assumption selected by the client.

4540 Reporting: external user report

.01 Here is model text if the actuary reports without reservation with regard to marriage breakdown:

> I have determined the capitalized value of the pension benefits and prepared this report in accordance with accepted actuarial practice in Canada, for purposes of settlement of a division of pension benefits resulting from marriage breakdown under the [Family Law Act] of [province]. In my opinion, the capitalized values are appropriate for this purpose.
>
> Respectfully submitted,
>
> [actuary]
>
> Fellow, Canadian Institute of Actuaries

4600 Calculation of Criminal Rate of Interest

4610 Scope

.01 The standards in section 4600 apply to an actuary's advice when determining whether the interest rate for a particular agreement or arrangement is a "criminal rate".

.02 The Criminal Code of Canada defines "criminal rate" as meaning an effective annual rate of interest calculated in accordance with generally accepted actuarial practices and principles that exceeds 60 percent on the credit advanced under an agreement or arrangement.

4620 Data

.01 The actuary should ascertain or make assumptions regarding the quantum and timing of all amounts actually or deemed to be advanced as well as all amounts actually or deemed to be repaid either as principal or as "interest" as defined in the Criminal Code. [Effective December 31, 2013]

.02 The actuary should report all data used in the calculation, and their sources. [Effective February 1, 2018]

.03 If data are not clear from the initial terms of the engagement, the actuary would obtain clarification from his or her client (for example, whether or not a particular item falls within the statutory definition of "interest," or the timing of a particular payment that could be made on various alternate dates).

4630 Method

.01 The actuary should calculate and report the effective rate of interest compounded annually, "i", such that the following equality is established:

$$\sum_{r=1}^{m} A_r \times (1+i)^{t_r} = \sum_{s=1}^{n} B_s \times (1+i)^{t_s}$$

where

- m is the total number of payments advanced by the lender to the borrower;
- n is the total number of payments repaid by the borrower to the lender;
- A_r is the amount of the rth payment advanced by the lender;
- B_s is the amount of the sth payment repaid by the borrower, consisting of principal, "interest" as defined, or a combination of both;

- t_r is the period measured in years (including fractional parts of a year) between the time that the rth payment is advanced by the lender to the borrower and the time on which the final repayment is made by the borrower to the lender; and
- t_s is the period measured in years (including fractional parts of a year) between the time that the sth payment is repaid by the borrower to the lender and the time on which the final payment is made by the borrower to the lender. [Effective December 31, 2013]

.02 If the calculation produces only one result, then the actuary would report that result. If the calculation produces more than one result, then the actuary would report only those that are positive and real, or zero.

.03 The formula in paragraph 4630.01 applies in most, but not all, situations.

4700 Reporting

4710 External user report

.01 For work pursuant to part 4000, any external user report that is prepared should:

- Identify the person for whom the report was prepared and, if that person is acting on behalf of a party to the dispute, that party to the dispute;
- State the effective date of the report and the effective date of any actuarial opinions and calculations in the report;
- Describe any terms of the appropriate engagement that are material to the actuary's work, including the role of the actuary, the scope and purpose of the work, any limitations or constraints on the work and any stipulated assumptions or methods;
- Where the actuary is aware of circumstances where the independence of his or her expert opinion may reasonably be questioned, disclose such circumstances;
- Disclose the results of the work;
- Describe the data, methods, and assumptions used for the work, including the terms and the amounts of the payments relevant to any calculations, for each of the scenarios presented in the report;
- Identify the assumptions and methods that are constrained by law, regulation, court practice, or established legal principles relevant to the work;
- Identify the differences between scenarios where the results of multiple scenarios are presented;
- Identify any margins for adverse deviations that are included, except where the assumption or method is mandated by law, regulation, court practice, or established legal principles relevant to the work, and the rationale for inclusion of any identified margins for adverse deviations;
- Describe every contingency that has been taken into account, and state that there may be other contingencies that could have a positive or negative effect that have not been taken into account;
- Disclose the extent of the actuary's reliance on others;
- List the sources of information on which the actuary has relied; and
- Include any other information required in accordance with the rules of civil procedure, the rules of law, or other rules that may be applicable for the relevant jurisdiction. [Effective February 1, 2018]

.01.1 Notwithstanding paragraph 1710.01, the actuary is not required to provide an opinion on assumptions which are stipulated by the terms of engagement provided such assumptions are plausible in accordance with paragraph 4320.03. [Effective February 1, 2018]

.01.2 Notwithstanding paragraph 1710.01, the actuary is not required to provide an opinion on assumptions or methods described in paragraph 4340.01 which are within the range of accepted actuarial practice pursuant to paragraph 4340.01. [Effective February 1, 2018]

.02 The actuary's external user report should be sufficiently detailed to enable another actuary to assess the reasonableness of the results. [Effective December 31, 2013]

.03 The actuary would prepare any draft reports and other documentation, taking into account the potential disclosure of such documents that may be required as part of the dispute resolution proceedings.

.04 Where the actuary reports the results of a capitalized value calculation without reservation, the disclosure wording that may be used is:

> I have determined the capitalized value of those aspects of the pecuniary damages described herein and prepared this report in accordance with accepted actuarial practice in Canada. It is my opinion that the assumptions and methods for which I have taken responsibility are appropriate in the circumstances of this case and for the purpose of this report.
>
> Respectfully submitted,
>
> [actuary]
>
> Fellow, Canadian Institute of Actuaries

Reporting with reservation

.05 Reporting with reservation or stating that the reporting requirements have not been followed would not excuse an actuary from these reporting standards.

.06 Notwithstanding paragraph 4340.01, the circumstances affecting the work may result in deviation from accepted actuarial practice in Canada. For example, the terms of the engagement may require that the actuary use an assumption that is outside of the range that the actuary considers plausible, or that the actuary use a method that the actuary considers is not appropriate, or that the actuary assist counsel with challenging a specific interpretation of the law. In such case, the actuary would disclose such deviation in the report.

New information

.07 Notwithstanding paragraph 1420.01, where an event occurs, such as the availability of new information, after the actuary has completed his or her report, the actuary would consider the potential effect of such event on his or her work, and would advise his or her client on a timely basis, if appropriate and subject to the terms of the engagement.

Disclosure of other expert's report

.08 The external user report need not disclose any error or shortcoming that the actuary identifies in the report of another actuary or other expert witness.

4720 Internal user report

.01 Unless an internal user report conforms to the recommendations for an external user report, an internal user report should state that it is not to be given to an external user. [Effective December 31, 2013]

.02 For the purpose of determining whether or not the work is in accordance with accepted actuarial practice, an internal user report continues to be an internal user report even if, in breach of the statement required by paragraph 4720.01, it is given to an external user or utilized in the dispute resolution proceeding.

5000—Public Personal Injury Compensation Plans

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5100 Scope

.01 Part 1000 applies to work within the scope of this part 5000.

.02 The standards in this part apply as follows:

- Section 5200 applies to an actuary's work on the valuation of benefits liabilities of a public personal injury compensation plan for the purpose of its financial statements; and
- Section 5300 applies to an actuary's work on the valuation of benefits liabilities of a public personal injury compensation plan for the purpose of providing input into its funding arrangements.

.03 The standards in this part do not apply to an actuary's work for an employer on the valuation of benefits liabilities and other related items in respect of its employees who are covered by a self-insured element of a public personal injury compensation plan, where such work is covered by the Practice-Specific Standards for Post-Employment Benefit Plans. Nevertheless, the standards in this part may provide useful guidance for such work.

.04 The standards in this part may also provide useful guidance for other work of an actuary for a public personal injury compensation plan, such as work on the costing of benefits or policy changes, the development of assessment rates or premiums, or work on experience-rating programs.

5200 Valuation for Financial Reporting Purposes

.01 This section 5200 applies to work and advice an actuary provides with respect to financial reporting for a public personal injury compensation plan's benefits liabilities and costs.

5210 Circumstances affecting the work

.01 The actuary's work on the valuation of the benefits liabilities or other items for the purpose of the financial statements of a public personal injury compensation plan should take into account the circumstances affecting the work. [Effective December 15, 2019]

.02 For the purposes of section 5200, the circumstances affecting the work would include

- Terms of the relevant statute and regulations;
- Relevant accounting standards and policies;
- Relevant policies and practices of the public personal injury compensation plan; and
- Terms of an appropriate engagement under which the work is being performed.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may be limited to the valuation of the benefits liabilities, or the work may also include advice on its financial position, its financial condition, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the public personal injury compensation plan relevant to the work of the actuary. These policies may include an accounting policy, operational policies and practices, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of

- Use of a specified asset value or method of asset valuation;
- The treatment of self-insured employers;
- The conditions considered in the liability for potential future occupational disease claims; and
- Depending on the circumstances affecting the work, treatment of definitive amendments and other pending changes.

.06 The purpose of the work may influence one or more of

- The assumptions chosen for the valuation, including the discount rate;
- The methods used in the valuation; and
- The provision for adverse deviations included in the valuation, if any.

.07 For valuations for financial reporting purposes, the actuary would consider the plan's accounting standards and policies.

5220 Data

.01 Where sufficient, reliable, and relevant data are not available for the valuation of a specific benefit, the actuary should make appropriate assumptions or introduce appropriate methods to compensate for any perceived deficiencies in the data. [Effective February 1, 2018]

.02 The actuary would attempt to rectify insufficient or unreliable data by obtaining corrected data. If corrected data is not available, the actuary would consider making assumptions or introducing methods to compensate for the perceived deficiencies in the data, where appropriate.

.03 The plan's historical experience data may not be directly relevant for the liability valuation in various circumstances. For example,

- The relevant statute may have been amended to provide a new or revised benefit;
- An applicable policy of the public personal injury compensation plan may have been revised recently;
- The public personal injury compensation plan's claim adjudication practices or administration practices may have changed recently;
- A recent appeal decision may be expected to have a material effect on future benefit payments; or
- Economic conditions or health care practices in the relevant jurisdiction may have changed, which may be expected to have a material effect on benefits.

.04 Where the data are not sufficiently relevant to expected future experience for a specific benefit, the actuary would consider adjusting the data and historic claim settlement patterns to make them more representative of expected experience going forward.

5230 Methods

.01 The actuary should value the benefits liabilities assuming that the public personal injury compensation plan continues indefinitely as a going concern entity. [Effective February 1, 2018]

.02 The value of the benefits liabilities is the value, by the actuarial present value method, of cash flows after the calculation date with respect to

- All claims incurred before that date, whether reported or not; and
- Workplace exposures that have occurred prior to that date. The workplace exposures should include those which may potentially lead to occupational disease claims, in accordance with the policy of the plan for recognizing such claims. [Effective December 15, 2019]

.03 The cash flows after the calculation date on account of all claims and exposures incurred before that date should include all expenses expected to be incurred after the calculation date which are related to those claims and exposures, including relevant administration expenses. [Effective December 15, 2019]

.04 The actuary's work should take into account the benefits, relevant policies and administration practices of the public personal injury compensation plan as of the calculation date, and should take into account any definitive or virtually definitive amendment to these items that is expected to have a material effect on benefits, unless the circumstances affecting the work require otherwise. [Effective December 15, 2019]

.05 The benefits liabilities should include an amount in respect of benefits for employees of a self-insured employer, unless the exclusion of such benefits is in accordance with the circumstances affecting the work. [Effective February 1, 2018]

Occupational disease

.06 For the purpose of this part, occupational disease refers to diseases or conditions arising from the cumulative effects of long-term exposure to repetitive activities or environmental hazards in the workplace. Latency refers to the period from exposure to a causative factor to the manifestation of the occupational disease.

.07 The actuary would include in the benefits liabilities an appropriate allowance for occupational disease claims expected to arise after the calculation date as a result of exposures incurred in the workplace prior to the calculation date. This allowance would be in respect of occupational diseases with a long latency period as recognized by the public personal injury compensation plan, by legislation, by regulation, or by appeal, regardless of the plan's approach to funding such claims.

5240 Assumptions

.01 The actuary should set assumptions that reflect the expectation that the public personal injury compensation plan will continue indefinitely as a going concern entity, but may make adjustment for short-term considerations, where appropriate. [Effective February 1, 2018]

.02 The actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the circumstances affecting the work, and should provide the rationale for the decision made with respect to margins. [Effective December 15, 2019]

.03 Where a public personal injury compensation plan has an established practice of providing ad hoc increases to benefits, or a periodic update to rates or tables used in the administration of the plan, the actuary should recognize such established practice when valuing the benefits liabilities by assuming the continuation of such practice, unless a policy decision to discontinue such established practice has been taken by the plan. [Effective December 15, 2019]

5250 Economic assumptions

.01 The economic assumptions chosen for the valuation would depend on the purpose of the valuation. For valuations for financial reporting purposes, the assumptions would be consistent with the plan's accounting standards and policies.

.02 The economic assumptions that are needed would depend on the nature of the benefits that are being valued, and may vary by year. Generally, the needed economic assumptions would include a discount rate and various inflation rate assumptions such as general inflation, wage inflation, and health care inflation.

.03 The economic assumptions chosen for the valuation would be internally consistent. In particular, the chosen assumptions would generally be appropriate for a similar time horizon. For example, a long-term investment rate of return assumption would generally not be combined with an inflation assumption based on short-term expectations. Similarly, the valuation would generally not mix assumptions based on current market prices (e.g., market-implied inflation expectation) with those not based on current prices.

.04 When determining a best estimate assumption for the expected rate of investment return, the actuary would take into account the expected investment return on the assets of the public personal injury compensation plan at the calculation date and the expected investment policy after that date.

.05 In establishing the assumption for the expected rate of investment return, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

.06 The expected investment expenses would depend on the investment policy of the plan, the types of investments held and projected to be held in the future, and the nature of investment operations.

.07 The actuary may adopt an assumption for the expected rate of investment income that varies depending on the part of the public personal injury compensation plan being valued and the assets backing the liabilities in that part.

.08 The economic assumptions need not be a flat rate but may vary from period to period.

5260 Non-economic assumptions

.01 When setting non-economic assumptions, the actuary would reflect all material contingencies.

.02 The actuary would recognize the effect of varying experience and settlement patterns that result from definitive or virtually definitive revisions to the plan's benefits or claims practices and would consider the relevance of historical claims experience.

.03 When setting the assumptions for wage loss, disability, pension, and other benefits, the actuary would take into account all applicable material contingencies, including the possibility of recoveries, relapses, mortality improvements, changing benefit levels, and the intermittence of income replacement and rehabilitation benefits throughout the lifetime of claimants. Further, the actuary would consider the potential effect on future benefit payments of factors such as changing economic conditions, employment levels, the claimant's occupation, and industry and seasonal variations.

5270 Margins for adverse deviations

.01 The actuary should not include a margin for adverse deviations when the circumstances affecting the work require a best estimate calculation. [Effective December 15, 2019]

.02 The actuary should include margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive, and should have the effect of increasing the benefits liabilities or reducing the reported value of the offsetting assets, the computation of which falls within the scope of the work of the actuary. In addition, the provision resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective February 1, 2018]

.03 If the actuary is required by legislation, regulation, accounting standards, or the accounting policy of the plan to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary may use such an imposed assumption, but the actuary should disclose that the margin is outside of the appropriate range and disclose the reason for using such margin. [Effective December 15, 2019]

.04 The actuary's decision with respect to margins for adverse deviations may reflect considerations such as

- Accounting policy of the public personal injury compensation plan;
- Underlying adaptability of the plan to changes in financial position;
- Legislative requirements regarding margins;
- Intergenerational equity among employers and other groups;
- Level of uncertainty inherent in the assumptions;
- Level of reliability or credibility of the data or historical information upon which the assumptions are based;
- Asset/liability mismatch risk;
- Propensity for ad hoc changes to be made to plan conditions; and
- Legislative or other restrictions on the ability to mitigate past losses.

.05 Examples of situations where the circumstances affecting the work might require a best estimate calculation include

- Legislation governing the plan may require a best estimate calculation;
- The relevant accounting standards or the accounting policy of the plan may require the use of best estimate assumptions; or
- The plan's financial reporting may recognize the monopoly nature of the plan and place a high priority on equity among generations, employers and other groups.

5280 Gain and loss analysis

.01 The actuary should conduct a gain and loss analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective February 1, 2018]

.02 The actuary should also conduct a reconciliation of the surplus or deficit position of the plan, provided that such reconciliation is in accordance with the terms of the engagement. [Effective February 1, 2018]

.03 The actuary's analysis would include all material gains and losses. At a minimum, the actuary's gain and loss analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the plan, legislative changes, investment returns on the plan's assets different from the assumed basis (if reconciling the surplus or deficit position of the plan), and any other areas where the difference between actual and expected experience is significant.

.04 The actuary would report a change in assumption if the current assumption differs nominally from the corresponding prior assumption, unless the change in the nominal amount results from the application of the same calculation method. For example, if certain rates used in the valuation are based on historical claims experience and calculated using the same averaging formula, the difference in assumed rates between the calculation date and the prior calculation date would not normally be considered as a change in assumptions. Nevertheless, the actuary may choose to disclose the effect of the updated rate assumption on the valuation results.

5290 Sensitivity testing

.01 The actuary should perform sensitivity testing of adverse scenarios, to illustrate and aid the understanding of the effect of adverse changes to assumptions. [Effective February 1, 2018]

.02 The adverse scenarios that the actuary tests should include at least

- A decrease of 100 basis points in the gross discount rate used for the valuation; and
- An increase of 100 basis points in the assumed general rate of inflation while maintaining the gross discount rate at the value used in the underlying valuation. [Effective December 15, 2019]

.03 The actuary should consider other scenarios that, in the actuary's judgment, represent plausible material risks to which the plan may be exposed, and provide sensitivity testing of those scenarios where appropriate given the circumstances affecting the work. [Effective December 15, 2019]

.04 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the benefits liabilities. The actuary may consider testing integrated sensitivity scenarios, for example, the effect of a deep and prolonged recession.

.05 The actuary may also perform sensitivity testing of favourable scenarios.

5295 Reporting

.01 For work pursuant to section 5200, the actuary should prepare a report in accordance with the circumstances affecting the work. [Effective December 15, 2019]

.02 An external user report on work pursuant to section 5200 should

- State the calculation date and the prior calculation date;
- Identify the legislation or other authority under which the work is completed;
- Describe any significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
- Describe the sources of data, benefit provisions, and policies used in the work, and any limitations thereon;
- Summarize the data used for the valuation, the data tests conducted to assess the accuracy and completeness of the data used in the work, issues regarding insufficient or unreliable data, and any assumptions and methods used in respect of insufficient or unreliable data;
- Describe the plan's benefits, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendment on the benefits liabilities;
- Describe any pending definitive or virtually definitive amendment, policy change, or change to administration practice, confirm whether or not such amendment or change has been reflected in the benefits liabilities, and identify the effect of such amendment or change on the benefits liabilities;
- Identify any significant changes to the relevant statute, strategic direction, or management policy, or any significant appeal decision that changes management policy or practice, since the prior calculation date and the consequent effect on the benefits liabilities;
- Describe the assumptions and methods used to calculate the benefit liabilities;
- Summarize the benefits liabilities;

- Disclose any imposed margins that the actuary has used in accordance with paragraph 5270.03 that, in the opinion of the actuary, are outside of the appropriate range;
- Report the aggregate provision for adverse deviations included in the benefits liabilities or state that there is no provision for adverse deviations where that is the case;
- Describe the treatment of benefits liabilities for self-insured employers;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no significant events of which the actuary is aware, include a statement to that effect;
- Describe and quantify the gains and losses between the prior calculation date and the current calculation date, and provide an analysis and explanation of the significant gain and loss items; and
- Describe the treatment of the liabilities for occupational disease claims. [Effective December 15, 2019]

.03 If the report does not include the results of the sensitivity testing that was completed, the actuary should prepare a separate report for the management of the public personal injury compensation plan that does include such sensitivity testing results. [Effective February 1, 2018]

.04 An external user report for work pursuant to section 5200 should provide the following five statements of opinion, all in the same section of the report and in the following order:

- A statement regarding data, which would usually be, "In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which would usually be, "In my opinion, the assumptions are appropriate for the purpose of the valuation.";
- A statement regarding methods, which would usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.";
- A statement regarding appropriateness, which would usually be, "In my opinion, the amount of the benefits liabilities makes appropriate provision for all personal injury compensation obligations and the financial statements fairly present the results of the valuation."; and
- A statement regarding conformation, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 15, 2019]

.05 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective December 15, 2019]

.06 The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of the engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate, or require that the actuary exclude the benefits liabilities in respect of certain occupational disease claims. In such case, the actuary would disclose such deviation in the report.

.07 The descriptions required in an external user report may be satisfied by reference to another report where appropriate. For instance, the liability estimate for potential future occupational disease claims or future administrative expenses may be based on a previous study of the plan's experience that is updated periodically. The details underlying these estimates could be incorporated by referencing the last study on which they are based rather than incorporating that material directly into the valuation report. Similarly, a report prepared for one purpose (e.g., funding) may reference material in a report prepared for another purpose (e.g., financial reporting) where appropriate.

.08 An internal user report may appropriately abbreviate the reporting requirements for an external user report. The degree of abbreviation would take into consideration the circumstances affecting the work and the intended audience.

5300 Valuation for Funding Purposes

.01 This section 5300 applies to the work and advice an actuary provides with respect to the financial position, financial condition, and funding of a public personal injury compensation plan.

5310 Circumstances affecting the work

.01 The actuary's work on the valuation of the benefits liabilities or other items for the purpose of providing input into its funding arrangements should take into account the circumstances affecting the work. [Effective December 15, 2019]

.02 For the purposes of section 5300, the circumstances affecting the work would include

- Terms of the relevant statute and regulations;
- Relevant policies and practices of the public personal injury compensation plan; and
- Terms of an appropriate engagement under which the work is being performed.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may be limited to the valuation of the benefits liabilities, or the work may also include advice on the funding of the public personal injury compensation plan, its financial position, its financial condition, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the public personal injury compensation plan relevant to the work of the actuary. These policies may include a funding policy, operational policies and practices, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of

- Use of a specified asset value or method of asset valuation;
- The treatment of self-insured employers;
- The conditions considered in the liability for potential future occupational disease claims; and
- Depending on the circumstances affecting the work, treatment of definitive amendments and other pending changes.

.06 Objectives of funding specified by the terms of an appropriate engagement may include, but are not limited to, a specific funding target, the security of benefits, a principle of equity among various groups of employers or various groups of individuals or among generations, or a funding approach for occupational disease claims.

.07 The purpose of the work may influence one or more of

- The assumptions chosen for the valuation, including the discount rate;
- The methods used in the valuation; and
- The provision for adverse deviations included in the valuation, if any.

.08 For valuations for funding purposes, the actuary would consider the plan's funding and investment policies.

.09 For the purposes of section 5300:

- New injury costs refers to the actuarial present value of benefits payable by the plan in respect of all new injuries incurred in a period, whether reported or not.
- Required revenue is an estimate of the amount necessary to fund the plan including new injury costs, plan administrative expenses, and any revenue adjustment required by the plan's funding policy to respond to its financial position.

.10 A funding valuation may be completed to determine the following:

- The plan's financial position under the funding valuation basis;
- An estimate of new injury costs for periods following the calculation date;
- An estimate of required revenue for periods following the calculation date; and
- The sufficiency of proposed premium or assessment rates.

5320 Data

.01 Where sufficient, reliable, and relevant data are not available for the valuation of a specific benefit, the actuary should make appropriate assumptions or introduce appropriate methods to compensate for any perceived deficiencies in the data. [Effective February 1, 2018]

.02 The actuary would attempt to rectify insufficient or unreliable data by obtaining corrected data. If corrected data is not available, the actuary would consider making assumptions or introducing methods to compensate for the perceived deficiencies in the data, where appropriate.

.03 The plan's historical experience data may not be directly relevant for the liability valuation in various circumstances. For example,

- The relevant statute may have been amended to provide a new or revised benefit;
- An applicable policy of the public personal injury compensation plan may have been revised recently;
- The public personal injury compensation plan's claim adjudication practices or administration practices may have changed recently;
- A recent appeal decision may be expected to have a material effect on future benefit payments; or
- Economic conditions or health care practices in the relevant jurisdiction may have changed, which may be expected to have a material effect on benefits.

.04 Where the data are not sufficiently relevant to expected future experience for a specific benefit, the actuary would consider adjusting the data and historic claim settlement patterns to make them more representative of expected experience going forward.

5330 Methods

.01 The actuary should value the benefits liabilities assuming that the public personal injury compensation plan continues indefinitely as a going concern entity. [Effective February 1, 2018]

.02 The value of the benefits liabilities is the value, by the actuarial present value method, of cash flows after the calculation date with respect to

- All claims incurred before that date, whether reported or not; and
- Workplace exposures that have occurred prior to that date. The workplace exposures should include those which may potentially lead to occupational disease claims, in accordance with the policy of the plan for recognizing such claims. [Effective December 15, 2019]

.03 The cash flows after the calculation date on account of all claims and exposures incurred before that date should include all expenses expected to be incurred after the calculation date which are related to those claims and exposures, including relevant administration expenses. [Effective December 15, 2019]

.04 The actuary's work should take into account the benefits, relevant policies, and administration practices of the public personal injury compensation plan as of the calculation date, and should take into account any definitive or virtually definitive amendment to these items that is expected to have a material effect on benefits, unless the circumstances affecting the work require otherwise. [Effective December 15, 2019]

.05 The benefits liabilities should include an amount in respect of benefits for employees of a self-insured employer, unless the exclusion of such benefits is in accordance with the circumstances affecting the work. [Effective February 1, 2018]

Occupational disease

.06 For the purpose of this part, occupational disease refers to diseases or conditions arising from the cumulative effects of long-term exposure to repetitive activities or environmental hazards in the workplace. Latency refers to the period from exposure to a causative factor to the manifestation of the occupational disease.

.07 The actuary would include in the benefits liabilities an appropriate allowance for occupational disease claims expected to arise after the calculation date as a result of exposures incurred in the workplace prior to the calculation date. This allowance would be in respect of occupational diseases with a long latency period as recognized by the public personal injury compensation plan, by legislation, by regulation, or by appeal, regardless of the plan's approach to funding such claims.

5340 Assumptions

.01 The actuary should set assumptions that reflect the expectation that the public personal injury compensation plan will continue indefinitely as a going concern entity, but may make adjustment for short-term considerations, where appropriate. [Effective February 1, 2018]

.02 The actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by law or by the circumstances affecting the work, and should provide the rationale for the decision made with respect to margins. [Effective December 15, 2019]

.03 Where a public personal injury compensation plan has an established practice of providing ad hoc increases to benefits, or a periodic update to rates or tables used in the administration of the plan, the actuary should recognize such established practice when valuing the benefits liabilities by assuming the continuation of such practice, unless a policy decision to discontinue such established practice has been taken by the plan. [Effective December 15, 2019]

5350 Economic assumptions

.01 The economic assumptions chosen for the valuation would depend on the purpose of the valuation. For valuations for funding purposes, the assumptions would be consistent with the plan's funding policy. Considerations for funding valuations would include, but are not limited to,

- The plan's risk tolerance;
- Stability of premiums or assessment rates; and
- Intergenerational equity among employers.

.02 The economic assumptions that are needed would depend on the nature of the benefits that are being valued, and may vary by year. Generally, the needed economic assumptions would include a discount rate and various inflation rate assumptions such as general inflation, wage inflation, and health care inflation.

.03 The economic assumptions chosen for the valuation would be internally consistent. In particular, the chosen assumptions would generally be appropriate for a similar time horizon. For example, a long-term investment rate of return assumption would generally not be combined with an inflation assumption based on short-term expectations. Similarly, the valuation would generally not mix assumptions based on current market prices (e.g., market-implied inflation expectation) with those not based on current prices.

.04 When determining a best estimate assumption for the expected rate of investment return, the actuary would take into account the expected investment return on the assets of the public personal injury compensation plan at the calculation date and the expected investment policy after that date.

.05 In establishing the assumption for the expected rate of investment return, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

.06 The expected investment expenses would depend on the investment policy of the plan, the types of investments held and projected to be held in the future, and the nature of investment operations.

.07 The actuary may adopt an assumption for the expected rate of investment income that varies depending on the part of the public personal injury compensation plan being valued and the assets backing the liabilities in that part.

.08 The economic assumptions need not be a flat rate but may vary from period to period.

5360 Non-economic assumptions

.01 When setting non-economic assumptions, the actuary would reflect all material contingencies.

.02 The actuary would recognize the effect of varying experience and settlement patterns that result from definitive or virtually definitive revisions to the plan's benefits or claims practices and would consider the relevance of historical claims experience.

.03 When setting the assumptions for wage loss, disability, pension, and other benefits, the actuary would take into account all applicable material contingencies, including the possibility of recoveries, relapses, mortality improvements, changing benefit levels, and the intermittence of income replacement and rehabilitation benefits throughout the lifetime of claimants. Further, the actuary would consider the potential effect on future benefit payments of factors such as changing economic conditions, employment levels, the claimant's occupation, and industry and seasonal variations.

5370 Margins for adverse deviations

.01 The actuary should not include a margin for adverse deviations when the circumstances affecting the work require a best estimate calculation. [Effective December 15, 2019]

.02 The actuary should include margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive, and should have the effect of increasing the benefits liabilities or reducing the reported value of the offsetting assets, the computation of which falls within the scope of the work of the actuary. In addition, the provision resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective February 1, 2018]

.03 If the actuary is required by legislation, regulation, or the funding policy of the plan to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary may use such an imposed assumption, but the actuary should disclose that the margin is outside of the appropriate range and disclose the reason for using such margin. [Effective December 15, 2019]

.04 The actuary's decision with respect to margin for adverse deviations may reflect considerations such as

- Funding policy of the public personal injury compensation plan;
- Relative importance placed on the balancing of competing interests compared to the achievement of full funding;
- Underlying adaptability of the plan to changes in financial position;
- Legislative requirements regarding margins;
- Intergenerational equity among employers and other groups;
- Level of uncertainty inherent in the assumptions;
- Level of reliability or credibility of the data or historical information upon which the assumptions are based;
- Asset/liability mismatch risk;
- Propensity for ad hoc changes to be made to plan conditions; and
- Legislative or other restrictions on the ability to mitigate past losses.

.05 Examples of situations where the circumstances affecting the work might require a best estimate calculation include

- Legislation governing the plan may require a best estimate calculation; or
- The plan's funding policy may recognize the monopoly nature of the plan and place a high priority on equity among generations, employers, and other groups.

5380 Gain and loss analysis

.01 The actuary should conduct a gain and loss analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective February 1, 2018]

.02 The actuary should also conduct a reconciliation of the surplus or deficit position of the plan, provided that such reconciliation is in accordance with the terms of the engagement. [Effective February 1, 2018]

.03 The actuary's analysis would include all material gains and losses. At a minimum, the actuary's gain and loss analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the plan, legislative changes, investment returns on the plan's assets different from the assumed basis (if reconciling the surplus or deficit position of the plan), and any other areas where the difference between actual and expected experience is significant.

.04 The actuary would report a change in assumption if the current assumption differs nominally from the corresponding prior assumption, unless the change in the nominal amount results from the application of the same calculation method. For example, if certain rates used in the valuation are based on historical claims experience and calculated using the same averaging formula, the difference in assumed rates between the calculation date and the prior calculation date would not normally be considered as a change in assumptions. Nevertheless, the actuary may choose to disclose the effect of the updated rate assumption on the valuation results.

5390 Sensitivity Testing

.01 The actuary should perform sensitivity testing of adverse scenarios, to illustrate and aid the understanding of the effect of adverse changes to assumptions. [Effective February 1, 2018]

.02 The adverse scenarios that the actuary tests should include at least

- A decrease of 100 basis points in the gross discount rate used for the valuation; and
- An increase of 100 basis points in the assumed general rate of inflation while maintaining the gross discount rate at the value used in the underlying valuation. [Effective December 15, 2019]

.03 The actuary should consider other scenarios that, in the actuary's judgment, represent plausible material risks to which the plan may be exposed, and provide sensitivity testing of those scenarios where appropriate given the circumstances affecting the work. [Effective December 15, 2019]

.04 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the benefits liabilities. The actuary may consider testing integrated sensitivity scenarios; for example, the effect of a deep and prolonged recession.

.05 The actuary may also perform sensitivity testing of favourable scenarios.

5395 Reporting

.01 For work pursuant to section 5300, the actuary should prepare a report in accordance with the circumstances affecting the work. [Effective December 15, 2019]

.02 An external user report on work pursuant to section 5300 should

- State the calculation date and the prior calculation date;
- Identify the legislation or other authority under which the work is completed;
- Describe any significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
- Describe the sources of data, benefit provisions, and policies used in the work, and any limitations thereon;
- Summarize the data used for the valuation, the data tests conducted to assess the accuracy and completeness of the data used in the work, issues regarding insufficient or unreliable data, and any assumptions and methods used in respect of insufficient or unreliable data;
- Describe the plan's benefits, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendment on the benefits liabilities;
- Describe any pending definitive or virtually definitive amendment, policy change, or change to administration practice, confirm whether or not such amendment or change has been reflected in the benefits liabilities, and identify the effect of such amendment or change on the benefits liabilities;
- Identify any significant changes to the relevant statute, strategic direction, or management policy, or any significant appeal decision that changes management policy or practice, since the prior calculation date and the consequent effect on the benefits liabilities;
- Describe the assumptions and methods used to calculate the benefits liabilities;
- Summarize the benefits liabilities;

- Disclose any imposed margins that the actuary has used in accordance with paragraph 5370.03 that, in the opinion of the actuary, are outside of the appropriate range;
- Report the aggregate provision for adverse deviations included in the benefits liabilities or state that there is no provision for adverse deviations where that is the case;
- Describe the treatment of benefit liabilities for self-insured employers;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no significant events of which the actuary is aware, include a statement to that effect;
- Describe and quantify the gains and losses between the prior calculation date and the current calculation date, and provide an analysis and explanation of the significant gain and loss items;
- Describe the treatment of the liabilities for occupational disease claims;
- Describe the sources of information on the plan's assets;
- Describe the plan's assets, including their market value, the assumptions and methods used to value the assets, and a summary of the assets by major category;
- Report the financial position at the calculation date;
- Describe the determination of new injury costs or required revenue for periods following the calculation date;
- Report the estimate of new injury costs or required revenue for a specified period following the calculation date; and
- If required by the terms of an appropriate engagement, provide an opinion on the sufficiency of proposed premium or assessment rates. [Effective December 15, 2019].

.03 If the report does not include the results of the sensitivity testing that was completed, the actuary should prepare a separate report for the management of the public personal injury compensation plan that does include such sensitivity testing results. [Effective February 1, 2018]

.04 An external user report for work pursuant to section 5300 should provide the following five statements of opinion, all in the same section of the report and in the following order:

- A statement regarding data, which would usually be, "In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which would usually be, "In my opinion, the assumptions are appropriate for the purpose of the valuation.";
- A statement regarding methods, which would usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.";
- A statement regarding appropriateness, which would usually be, "In my opinion the [amount of the benefits liabilities and estimated funding requirements] make appropriate provision for all personal injury compensation obligations given the plan's funding policy."; and
- A statement regarding conformation, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective December 15, 2019]

.05 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective December 15, 2019]

.06 The wording in square brackets in paragraph 5395.04 is variable and other wording may be used based on the terms of the engagement for the funding valuation.

.07 The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of the engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate, or require that the actuary exclude the benefits liabilities in respect of certain occupational disease claims. In such case, the actuary would disclose such deviation in the report.

.08 The descriptions required in an external user report may be satisfied by reference to another report where appropriate. For instance, the liability estimate for potential future occupational disease claims or future administrative expenses may be based on a previous study of the plan's experience that is updated periodically. The details underlying these estimates could be incorporated by referencing the last study on which they are based rather than incorporating that material directly into the valuation report. Similarly, a report prepared for one purpose (e.g., funding) may reference material in a report prepared for another purpose (e.g., financial reporting) where appropriate.

.09 An internal user report may appropriately abbreviate the reporting requirements for an external user report. The degree of abbreviation would take into consideration the circumstances affecting the work and the intended audience.

.10 The actuary's advice on funding may describe a range for required revenue or expected new injury costs. Funding requirements may be expressed in dollars or as a percentage of assessable payroll.

6000 – Post-Employment Benefit Plans

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6100 Scope

.01 The standards in part 6000 apply as follows:

- Section 6200 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to a post-employment benefit plan, except where such advice relates to items covered by section 6300 or section 6400;
- Section 6300 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to the wind-up, in full or in part, of a post-employment benefit plan; and
- Section 6400 applies to advice that an actuary provides regarding financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of a trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

For the purposes of determining whether section 6300 applies, the wind-up of a post-employment benefit plan would involve the termination of future benefits for some or all plan members, the termination of some or all plan benefits and the distribution of some or all of the plan's assets, if any. Examples of work with respect to wind-ups include the calculation of benefit plan costs or entitlements:

- When a benefit trust is being replaced with an insured arrangement;
- Where assets from a company's liquidation may be provided as cash in lieu of employee benefit plans upon insolvency or upon the wind-up of a post-employment benefit plan trust; and
- Where the plan sponsor offers cash in lieu of future benefits.

The cessation of benefit accruals or termination of a post-employment benefit plan, not involving the termination of plan benefits and distribution of plan or other assets, would not constitute a plan wind-up. For example, the closure of a post-employment benefit plan to future new members would not constitute a wind-up.

.02 The standards in sections 6200 through 6400 apply to an actuary's advice with respect to a post-employment benefit plan that provides benefits other than pension benefits to the plan's members and their covered spouses and dependants, whether funded or not, whether insured or not, and whether in the private or public sector. Such plans include any arrangement that provides:

- Long-term employee benefits (and compensated absences) including long-service leave or sabbatical leave, jubilee or other long-service benefits, long-term disability benefits, and profit sharing, bonuses, and other deferred compensation such as retiring allowances that are to be paid far enough into the future to be considered to be a post-employment benefit (long-term employee benefits would generally include benefits that commence or continue to be payable more than 12 months after the initial incident that caused the benefit to be paid; for example, long-term disability benefits);
- Short-term employee benefits (and compensated absences) that accumulate or vest, such as accumulated sick days or vacation days that can be saved in one period and drawn or paid out in another period;
- Benefits to which plan members become entitled when they are no longer actively at work, such as post-employment life insurance or post-employment health care; and/or
- Termination benefits payable to an employee as a result of termination of employment, if some or all of the benefits are payable on or after the date of termination of employment.

.03 The standards in sections 6200 through 6400 do not apply to an actuary's advice with respect to any arrangement that is:

- A plan within the scope of part 3000 Pension Plans, part 5000 Public Personal Injury Compensation Plans, or part 7000 Social Security Programs;
- A short-term employee benefit plan such as wages, salaries, and social security contributions, paid annual vacation/leave and paid sick leave, profit sharing and bonuses (if payable within 12 months of the end of the period to which they relate) and non-monetary benefits (such as medical care, housing, cars, and free or subsidized goods or services) for current employees that do not accumulate or vest;
- A post-employment benefit plan whose benefits are all guaranteed by a life insurer; or
- A social security program such as the Canada Pension Plan and Québec Pension Plan.

.04 The standards in sections 6200 through 6400 also apply to an actuary's advice to an employer with respect to the self-insured element of a public personal injury compensation plan that covers the employees of that employer; for example, self-insured workers' compensation plans.

.05 An actuary's advice with respect to a post-employment benefit plan may relate to items such as:

- Required or recommended funding of the plan;
- Projected cash flows of the plan with or without future new entrants;
- Determination of the actuarial present value of the projected or accrued benefits of the plan with or without future new entrants;
- Determination of amounts for financial reporting of a plan's cost; or
- Determination of the obligations for reporting in the employer's financial statements, or the plan's financial statements, or the financial statements of a trust associated with the plan.

6200 Advice on the Funding, Funded Status, Financial Condition, or Financial Position of a Post-Employment Benefit Plan

.01 This section 6200 applies to advice that an actuary provides regarding the funding, funded status, financial position, or the financial condition with respect to a post-employment benefit plan, except where such advice is with respect to:

- The wind-up, in full or in part, of a post-employment benefit plan; or
- The financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of a trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

6210 General

.01 The actuary's advice with respect to a post-employment benefit plan should take account of the circumstances affecting the work. [Effective February 1, 2018]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary should select an asset valuation method, where applicable, that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.04 The actuary's advice with respect to a post-employment benefit plan should take account of the post-employment benefit plan's benefit provisions at the calculation date, except that the actuary may reflect a pending amendment to the post-employment benefit plan that increases the value of its benefits. [Effective June 30, 2013]

.05 The actuary's advice with respect to a post-employment benefit plan should take account of all relevant data, including historical claims experience. [Effective June 30, 2013]

.06 The actuary should select assumptions that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

.07 The actuary should determine the next calculation date and the actuary's advice should cover at least the period between the calculation date and the next calculation date. [Effective June 30, 2013]

Circumstances affecting the work

.08 For the purposes of section 6200, the circumstances affecting the work would include:

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.09 The terms of an appropriate engagement would specify whether the actuary's advice relates to:

- The funded status or the funding of the post-employment benefit plan or a combination thereof;
- The calculation of the actuarial present value of future benefits payable from a post-employment benefit plan;
- The calculation of the expected future cash flows from a post-employment benefit plan; or
- Other financial information with respect to the post-employment benefit plan that is actuarial in nature.

.10 The terms of an appropriate engagement may specify the use of a particular actuarial cost method and/or a particular asset valuation method.

.11 The terms of an appropriate engagement may specify that the actuary's advice may be related to the entire plan, or to a portion of the plan, or to a selected group of members only.

Actuarial cost methods

.12 Actuarial cost methods include, among others:

- Cost allocation methods, which allocate the actuarial present value of projected benefits among time periods, including attained age actuarial cost methods, entry age actuarial cost methods, aggregate actuarial cost methods, and individual level premium actuarial cost methods;
- Benefit allocation methods, which allocate a portion of the actuarial present value of projected benefits to a time period, including the accrued benefit actuarial cost method, the unit credit actuarial cost method, and the projected unit credit actuarial cost method; and
- Forecast actuarial cost methods, which allocate a portion of the actuarial present value of projected benefits to the forecast period based on:
    - The actuarial present value, at the calculation date, of projected benefits at the end of the forecast period, including, if appropriate, benefits for those who are expected to become members between the calculation date and the end of the forecast period;

minus

- The actuarial present value of projected benefits at the calculation date;

plus

- The actuarial present value, at the calculation date, of benefits expected to be paid during the forecast period.

Asset valuation methods

.13 If the plan has assets, the use of an asset valuation method that produces an asset value different from market value may be appropriate depending on the circumstances affecting the work. For example, the use of a smoothed asset value may be appropriate to moderate the volatility of contribution rates for purposes of advice on funding.

.14 The value of assets may be, subject to specific requirements for different types of valuation, any of:

- Their market value;
- Their market value adjusted to moderate volatility in investment returns;
- The present value of their cash flows after the calculation date; and
- Their value assuming a constant rate of return to maturity in the case of illiquid assets with fixed redemption values.

Plan provisions

.15 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsors or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.16 The actuary would consider all benefits that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

Anticipated amendment or deferred recognition of a pending amendment

.17 The actuary's advice on a post-employment benefit plan may, subject to disclosure, reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, and the amendment increases the plan's benefits. For example, the plan sponsor may have a regular pattern of increasing the dental fee guide schedules that the post-employment benefit plan uses for its benefit limit. The actuary's advice would normally reflect continued adoption of such increased limits.

.18 If, at the calculation date, an amendment to the post-employment benefit plan is definitive or virtually definitive, and:

- If the effective date of the amendment is during the period for which the report gives advice on funding, then the advice on funding up to the effective date may disregard the amendment, but the advice on funding after the effective date would take the amendment into account; or
- If the effective date of the amendment is after the period for which the report gives advice on funding, then the advice on funding may disregard the amendment.

.19 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.20 If an actuary is aware of an expected amendment to the post-employment benefit plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

Data

.21 In addition to the current plan membership and asset data, if relevant, the actuary would collect information on historical claims experience, such as nature of absence and benefit levels. Data may come from the plan sponsor or plan administrator or other sources, such as insurance carriers, brokers, or external third-party plan administrators.

.22 In identifying the data needed, the actuary would bear in mind the pertinent benefits (e.g., those applicable during retirement, disability, or following termination of employment). If applicable, the actuary may obtain claims data split by plan, by age, by location, by status (retiree, inactive, spouse, etc.) and by type of expense (drug, hospital, payment for loss of income, etc.).

.23 Where appropriate, in analyzing any relevant historical claims data, the data would be adjusted to reflect the trend in the cost of benefits between the reference period and the calculation date. Where appropriate, the actuary would also adjust past experience results to reflect non-recurring influences such as changes in the benefits offered, significant changes in the demographics of the group, changes in government programs, or unusual claims.

.24 Available data may have limited value or low credibility. Where the benefit cost for former members or current retirees is not fully credible or does not reasonably represent the likely benefit cost for similar future groups, the actuary may rely on the experience of other members or other sources of data that the actuary considers reasonable and relevant. Such other data would be adjusted appropriately for the expected differences between these groups and the group from which the data were drawn.

.25 The actuary may project data, including membership data and data with respect to claim costs from the effective date of the data to the calculation date, using appropriate extrapolation techniques. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data. The actuary may also use recent credible claims experience in the extrapolation.

Assumptions

.26 In establishing the assumptions, the actuary would usually assume the continuation of the current provisions and practices of government programs, but anticipate the effect of legislative changes scheduled to be implemented at a future date. The actuary may also present alternative results reflecting different scenarios of the future. If the purpose of the valuation is such that the effect of anticipated future government changes is to be taken into account, the actuary would make appropriate assumptions in respect thereof.

.27 In determining claim costs assumptions, where necessary, the actuary would consider available claims experience with regards to items such as:

- Claimant age, member status, coverage category, and benefit type;
- Credibility; and
- Relevance to future periods and future benefit provisions.

.28 The assumption with respect to the future claims trend rate, where necessary, may be divided into short-term and longer-term components. The short-term component would often be based on the level experienced in the recent past by the plan and plan members. The longer-term component would be consistent with the assumption regarding future changes in benefit programs and general economic conditions such as nominal Gross Domestic Product growth. The actuary would determine the period of time required to transition from the short-term trends to the longer-term trends and when the short-term trends may need to be revised.

.29 In situations where there is not sufficient data with respect to claim costs—for example if the post-employment benefit plan has only a small number of members or does not yet have any members in payment status—the actuary may develop the applicable assumptions based on experience with other similar plans.

Discount rate

.30 For post-employment benefit plans that are not funded, in selecting the best estimate assumption for the discount rate, the actuary would reflect the yields on fixed income investments, considering the expected future benefit payments of the plan and the circumstances affecting the work.

Expenses

.31 The actuary's advice on a post-employment benefit plan would take account of expenses, including whether or not they are expected to be paid from the post-employment benefit plan's assets, if any.

.32 The actuary would consider, as part of the claims experience, the administration costs related to the adjudication of the claims including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary would also consider other expenses related to the post-employment benefit plan.

Next calculation date

.33 The next calculation date is the latest date for which the actuary considers the advice with respect to a post-employment benefit plan to be applicable. The actuary would take into consideration the terms of an appropriate engagement in determining the next calculation date, but the next calculation date would not normally be more than three years after the current calculation date.

6220 Advice on Funding or Funded Status

.01 If the actuary is providing advice with respect to the funding and/or funded status of a post-employment benefit plan that is pre-funded in some manner, the actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by the terms of an appropriate engagement. [Effective February 1, 2018]

.02 Advice on funding or funded status may include:

- Advice regarding the amount of assets to be earmarked, whether or not segregated, to cover post-employment benefit commitments;
- Advice regarding a systematic method of accumulating funds to provide the post-employment benefit commitments; or
- Advice on the funding implications of a plan amendment.

.03 The terms of an appropriate engagement may specify applicable objectives of funding, which may include a formal or informal funding policy.

.04 Objectives of funding specified by the terms of an appropriate engagement may include considerations such as the security of benefits and related provisions for adverse deviations, the allocation of contributions among time periods, and/or inter-generational equity.

.05 Depending on the circumstances affecting the work, the actuary's advice on funding may describe a range of contributions.

Discount rate

.06 If the actuary's advice relates to the funding or funded status of a post-employment benefit plan, in selecting the best estimate assumption for the discount rate, the actuary may either:

- Take into account the expected investment return on the assets, if any, of the post-employment benefit plan at the calculation date and the expected investment policy after that date; or
- Reflect the yields on fixed income investments, considering the expected future benefit payments of the post-employment benefit plan and the circumstances affecting the work.

.07 In establishing the discount rate assumption, the actuary would assume that there will be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

6230 Reporting: External User Report

.01 An external user report on work pursuant to section 6200 should:

- Describe any significant terms of the appropriate engagement that are material to the actuary's advice;
- Include the calculation date, the report date, and the next calculation date, if applicable;
- Describe the sources of membership data, plan provisions, the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, if any, including their market value and a summary of the assets by major category;
- Describe the post-employment benefit plan's provisions, including the identification of any pending definitive or virtually definitive amendment of which the actuary is aware, and the manner in which any such amendments have been reflected in the actuary's advice;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State the type of valuation undertaken under the terms of the appropriate engagement;
- For any one valuation undertaken, describe and quantify the gains and losses between the prior calculation date and the calculation date;
- For any one valuation undertaken, report the effect on the key results of the valuation of using a discount rate 1.0% lower than that used for the valuation; and
- For any one valuation undertaken, where relevant, report the effect on the key results of the valuation of using an assumed future claims trend rate 1.0% higher than that used for the valuation. [Effective February 1, 2018]

.02 For each valuation undertaken by the actuary, the external user report should:

- If there is no provision for adverse deviations, include a statement to that effect;
- Describe the claims administration expenses or other plan expenses that are included in the work; and
- Report the results of the valuation. [Effective March 31, 2015]

.03 An external user report that provides advice on funding should:

- Describe the rationale for any assumed additional returns, net of investment management expenses, from an active investment management strategy, included in the discount rate assumption;
- Describe the determination of contributions or a range of contributions between the calculation date and the next calculation date; and
- If contributions are fixed by the terms of the post-employment benefit plan or other governing documents (e.g., a collective agreement), then either:
    - Report that the contributions are adequate to fund the post-employment benefit plan in accordance with its terms; or
    - Report that the contributions are not adequate to fund the post-employment benefit plan in accordance with its terms; and
        - Describe the contributions required to fund the post-employment benefit plan adequately in accordance with its terms;
        - Describe one or more possible ways in which benefits may be reduced such that the contributions would be adequate to fund the post-employment benefit plan in accordance with its terms; or
        - Describe a combination of increases in contributions and reductions in benefits that would result in the funding being in accordance with its terms. [Effective June 30, 2013]

.04 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement as to assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement as to methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement as to conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective June 30, 2013]

.05 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

Significant terms of appropriate engagement

.06 Significant terms of the appropriate engagement may include matters such as:

- The use of a specified actuarial cost method;
- The use of a specified asset valuation method, where applicable;
- The exclusion of benefits for purposes of a valuation;
- The extent of margins for adverse deviations, if any, to be included in selecting assumptions; and
- The funding policy, which may include pay-as-you-go funding.

Membership data

.07 The actuary would describe any assumptions and methods used in respect of insufficient or unreliable membership or census/employee data.

.08 The actuary may describe limitations on the tests conducted in the review of the data which has been determined to be sufficient and reliable for purposes of the valuation(s). For example, the actuary may describe that the data tests will not capture all possible deficiencies in the data and reliance is also placed on the certification of the plan sponsor or plan administrator as to the quality of the data.

Methods

.09 For each valuation included in the external user report for which there was a prior valuation, the description of the actuarial cost method would include a description of any change to the actuarial cost method used in the prior valuation and the rationale for such change.

.10 For each valuation included in the external user report for which there was a prior valuation, the description of the method to value the assets, if any, would include a description of any change to the asset valuation method used in the prior valuation and the rationale for such change.

Types of valuations

.11 An external user report with respect to a post-employment benefit plan would normally include information on only one valuation, which is typically a going concern valuation. To the extent that the external user report provides information with respect to multiple valuations, the actuary would include information with respect to the types of valuations required by the circumstances affecting the work.

Assumptions

.12 For each valuation included in the external user report for which there was a prior valuation, the description of assumptions would include a description of any changes to the assumptions used in the prior valuation.

.13 For each valuation included in the external user report, the description of the assumptions would, if appropriate for the circumstances affecting the work, describe:

- The development of the assumed claim costs;
- The claims experience information used to develop the assumed claim costs; and
- The extent to which the claims experience information has influenced the selection of the assumed future cost trend rates.

Relevant results of the valuation

.14 The results of the valuation will depend on the purpose(s) of the valuation and the circumstances affecting the work. The results of the valuation may include such information as:

- The present value of projected benefits;
- The present value of projected benefits allocated to periods up to the calculation date;
- The projected cash flows; and/or
- The service cost for periods following the calculation date.

Reporting gains and losses

.15 The reported gains and losses for a valuation would include the gain or loss due to a change in the actuarial cost method or a change in the method for valuing the assets, if any, and each significant change in assumptions and plan provisions determined at the calculation date. If an amendment to the post-employment benefit plan prompts the actuary to change the assumptions, the actuary may report the combined effect of the amendment and the resultant change in assumptions.

Sensitivity analysis

.16 When following the recommendations to illustrate the effect of a change in discount rate, trend rate or other assumption on a valuation, the actuary would maintain all other assumptions and methods as used in the underlying valuation.

Reference to other reports

.17 The disclosures required in the external user report may be incorporated by reference to another actuarial valuation report prepared in accordance with accepted actuarial practice with the same calculation date.

Statements of opinion

.18 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified but would be followed to the extent practicable.

.19 While a separate statement regarding assumptions would usually be included in respect of each purpose of the valuation, the statements regarding assumptions may be combined where the statements do not differ among some or all of the valuation's purposes. The report would indicate clearly which statement regarding assumptions applies to each of the valuation's purposes.

.20 While a separate statement regarding methods would usually be included in respect of each purpose of the valuation, the statements regarding methods may be combined where the statements do not differ between some or all of the valuation's purposes. The report would indicate clearly which statement regarding methods applies to each of the valuation's purposes.

6300 Full or Partial Wind-up Valuation

.01 This section 6300 applies to advice that an actuary provides with respect to the wind-up (termination of future benefits for some or all members, the termination of some or all plan benefits, and the distribution of some or all of the plan's assets, if any), in full or in part, of a post-employment benefit plan. Examples of work with respect to wind-ups include the calculation of benefit plan costs or entitlements:

- When a benefit trust is being replaced with an insured arrangement;
- Where assets from a company's liquidation may be provided as cash in lieu of employee benefit plans upon insolvency or upon the wind-up of a post-employment benefit plan trust; and
- Where the plan sponsor offers cash in lieu of future benefits.

.02 This section 6300 does not apply in situations where the post-employment benefit plan is no longer available for future members but accrued benefits are not being settled.

6310 General

.01 The actuary's advice with respect to a post-employment benefit plan that is being wound up, in full or in part, should take account of the circumstances affecting the work, and assume the plan is being wound up at the calculation date. [Effective February 1, 2018]

.02 The actuary should take account of subsequent events up to the cut-off date. [Effective June 30, 2013]

.03 The post-employment benefit plan's assets, if any, should be valued at liquidation value. [Effective June 30, 2013]

.04 The actuary should take account of the post-employment benefit plan's benefit provisions at the calculation date, except that the actuary may reflect a pending amendment to the post-employment benefit plan. [Effective June 30, 2013]

.05 The actuary's advice with respect to a post-employment benefit plan should take account of all relevant data, including historical claims experience. [Effective June 30, 2013]

.06 The actuary should select assumptions that:

- Are either best estimate assumptions or are best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, required by the terms of an appropriate engagement;
- Are selected as at the cut-off date; and
- Reflect the expected method of benefit settlement. [Effective February 1, 2018]

.07 Unless it is expected that expenses will not be paid from the post-employment benefit plan's assets, the actuary should select an explicit assumption regarding the expenses of wind-up and either offset the resulting expense provision against the post-employment benefit plan's assets, if any, or add the resulting expense provision to the post-employment benefit plan's liabilities. Expenses may include administration costs (which may be incurred from a third-party administrator or an insurer), or other expenses. [Effective June 30, 2013]

Scope

.08 This section does not prescribe the manner in which:

- Benefit entitlements would be determined;
- Funding obligations would be determined; or
- The post-employment benefit plan's assets, if any, would be allocated between the employer(s) and the members or among members themselves.

.09 Rather, those issues would be determined in accordance with the law, the plan provisions or governance documents, or by an entity empowered thereunder to make that determination. It may be appropriate, however, to use the results of the valuation to address one or more of those issues, or to disclose their resolution in the report.

Circumstances affecting the work

.10 For the purposes of section 6300, the circumstances affecting the work would include:

- Whether the actuary's advice relates to the funding, funded status, financial position, or the financial condition of the post-employment benefit plan, or a combination thereof;
- Whether the actuary's advice relates to the present value of expected future benefits under the post-employment benefit plan;
- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

Cut-off date

.11 The cut-off date would be the date up to which subsequent events would be recognized in the valuation.

Partial wind-up

.12 A partial wind-up occurs when a subset of the members terminates membership in circumstances that require wind-up with respect to those members. Such wind-up does not apply to the continuing members, although it may also be necessary, for other reasons, to value the benefits of the continuing members.

.13 The standards for a partial wind-up are the same as the standards for a full wind-up.

Assumptions

.14 The selection of the assumptions would normally be determined in accordance with the law (if applicable), the plan provisions or governance documents, or by an entity empowered thereunder to make that determination.

.15 The actuary may need to consider various appropriate tax treatments for calculations prepared for wind-ups of post-employment benefit plans.

Expenses

.16 The actuary would consider as part of the claims experience the administration costs related to the adjudication of the claims, including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary may also consider other expenses related to the post-employment benefit plan.

Plan provisions

.17 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsors or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.18 The actuary would consider all benefits that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

6320 Reporting: External User Report

.01 If a previous external user report was prepared with respect to the wind-up, the actuary should describe and quantify the gains and losses between the prior calculation date and the calculation date. [Effective June 30, 2013]

.02 An external user report should:

- Include the wind-up date, the calculation date, the cut-off date, and the report date;
- Describe the events precipitating the wind-up, of which the actuary is aware, that affect the terms of the wind-up, the benefit entitlements, or the valuation results;
- Describe the sources of membership data, plan provisions, and the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, including any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Subject to any applicable privacy legislation:
  - Include the detailed individual membership data; or
  - Include an offer to provide detailed individual membership data on request to the plan sponsor or the plan administrator;
- Describe the liquidation value of the assets, if any, and a summary of the assets by major category;
- Describe the post-employment benefit plan's provisions, including an identification of:
  - Any amendments made since any previous external user report with respect to the plan which affect benefit entitlements; and

  - Any subsequent events or post-wind-up contingent events, of which the actuary is aware, which affect benefit entitlements;

- Report the explicit assumption regarding the expenses of wind-up or justify the expectation that expenses will not be paid from the post-employment benefit plan's assets, if any;
- Report the funded status at the calculation date, and state whether an updated report will be required in the future;
- If applicable, report the settlement value for each plan member when settlement is to be made by cash payments to the member;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- State that the funded status at settlement may differ from that contained in the report, unless the report includes the funded status at the time of final settlement;
- If the actuary relies upon direction concerning unclear or contentious issues:
  - Describe each such issue;
  - Describe the direction relied upon or, where appropriate, a summary thereof; and
  - Identify the person providing such direction and the basis of authority of such person;
- Describe any post-wind-up contingent events that may affect the distribution of the post-employment benefit plan's assets, if any;
- Describe whether a recalculation of the value of benefit entitlements is required at settlement;
- Where a member has a choice of settlement options that the member has not yet made, describe the assumptions made regarding such choice;
- If applicable, describe the method to allocate the post-employment benefit plan's assets among classes of members and the method to distribute surplus;

- Describe the actuary's role in calculating settlement values, including the assumptions and methods used for their calculation; and
- Describe the sensitivity of the valuation results to the post-employment benefit plan's investment policy and to market conditions between the report date and the settlement date. [Effective February 1, 2018]

.03 An external user report should include the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions, which should usually be, "In my opinion, the assumptions are appropriate for the purpose(s) of the valuation(s).";
- A statement regarding methods, which should usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose(s) of the valuation(s)."; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective June 30, 2013]

.04 The external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

Dates

.05 The wind-up date of the post-employment benefit plan would be determined by the plan administrator or the plan sponsor or others with responsibility to wind up the plan, based on the plan provisions, the law, and the circumstances of the wind-up.

.06 The calculation date of the funded status would usually be the wind-up date.

.07 For a particular member, the date of calculation of benefit entitlement would depend on the circumstances of the wind-up and the terms of the post-employment benefit plan, and may be the date of termination of employment, the date of termination of membership, the wind-up date, or another date.

Nature of wind-ups

.08 The purpose of a wind-up valuation may be to determine, or to provide the basis for determining:

- The funded status of the post-employment benefit plan;
- The total value of the benefit entitlements of all members prior to taking account of the funded status of the post-employment benefit plan;
- Any required additional funding;
- The amounts and methods of determining benefit entitlements, including any adjustment required due to a wind-up deficit;
- The amount and method of distribution of a wind-up surplus; or
- Payout for loss of benefit entitlements upon insolvency.

.09 A wind-up may be complex and may take a long time. Delays may require a series of reports by the actuary. Since the funded status or other available funds for the post-employment benefit plan at the final settlement date may affect whether benefit entitlements can be settled in full, the reflection of subsequent events in each report would be critical.

Membership data

.10 The finality of wind-up would call for the actuary to obtain precise membership data. The membership data are the responsibility of the plan sponsor or plan administrator. However, if the actuary is working with incomplete, unreliable, or missing data the actuary would make assumptions regarding the data. The actuary may, if the circumstances dictate, include a provisional sum in the wind-up valuation with respect to missing members if the actuary believes that additional members might have benefit entitlements under the post-employment benefit plan but their membership information is missing.

Assumptions

.11 The selected assumptions would:

- In respect of benefit entitlements that are assumed to be settled by purchase of insurance, reflect single premium rates; and
- In respect of benefit entitlements that are assumed to be settled in some other manner, reflect the manner in which such benefits would be settled.

.12 If future benefits depend on continued employment, the actuary would consider reflecting contingent events. For example, if a member is eligible for post-retirement benefits only if the member remains in employment until age 55, the actuary may make an assumption as to the probability of this event occurring and the member's benefit may be discounted for the probability of the event occurring.

.13 Wind-up expenses usually include, but are not limited to:

- Fees related to the preparation of the actuarial wind-up report;
- Legal fees;
- Insurer or adjudicator administration expenses; and
- Custodial and investment management expenses.

.14 The actuary would either net wind-up expenses against the post-employment benefit plan's assets, if any, or add the assumed wind-up expenses to the post-employment benefit plan's liabilities in calculating the ratio of assets to liabilities as a measure of financial security of the benefit entitlements, unless the expectation is that expenses will not be paid from the post-employment benefit plan's assets, if any. However, an exception may be made for future custodial and investment management expenses, which may be netted against future investment return in the treatment of subsequent events.

Subsequent events

.15 Ideally, in a wind-up valuation, all subsequent events would be reflected. This ensures that the funded status is presented as fairly as possible as of the report date. However, it would be impossible to recognize subsequent events right up to the report date. Accordingly, the actuary would select a cut-off date that is close to the report date.

.16 The actuary would ascertain that no subsequent events have occurred between the cut-off date and the report date that would change the funded status significantly; otherwise the actuary would select a later cut-off date. For clarity, a subsequent event may be material yet not be so significant as to require selection of a later cut-off date.

.17 It may be appropriate to have more than one cut-off date. For example, the actuary may select one cut-off date for the active membership data and another cut-off date for the inactive membership data.

.18 Common subsequent events are:

- Contributions remitted to the plan;
- Expenses paid from the post-employment benefit plan's assets, if any;
- Actual investment return on the post-employment benefit plan's assets, if any;
- Change in assumptions;
- Corrections to the membership data; and
- Deaths of members or other significant plan experience.

Use of another person's work

.19 Some aspects of the wind-up may be unclear to the actuary or contentious. Examples are:

- The determination of the wind-up date;
- The members, former members, or recently terminated members to be included in the wind-up;
- Whether or not to assume salary increases or health care cost trend rate in determining benefit entitlements;
- Eligibility for benefits payable only with the consent of the plan sponsor or plan administrator;
- The liquidation value of the post-employment benefit plan's assets, if any;
- The method to allocate the post-employment benefit plan's assets, if any, among members; and
- Whether or not wind-up expenses are to be paid from the post-employment benefit plan's assets, if any, or included in the calculation of the liabilities or expected future benefits.

.20 To decide those aspects, the actuary may rely upon direction from another person with the necessary knowledge, such as legal counsel or the employer, or the necessary authority, such as the plan sponsor or plan administrator. The actuary would consider any issues of confidentiality or privilege that may arise.

Statements of opinion

.21 Where different statements of opinion apply in respect of different purposes of the valuation, the above requirements may be modified, but would be followed to the extent practicable.

6400 Financial Reporting of Post-Employment Costs

.01 This section 6400 applies to advice that an actuary provides regarding financial reporting of a post-employment benefit plan's costs and obligations in the employer's financial statements, or the post-employment benefit plan's financial statements, or the financial statements of the trust associated with the post-employment benefit plan, where the calculations and advice are provided in accordance with an applicable financial reporting standard.

6410 General

.01 For financial reporting purposes, the actuary should use methods and assumptions for the value of assets, if any, and post-employment benefit obligations that are appropriate to the basis of financial reporting in the employer's or post-employment benefit plan's or trust's financial statements, as applicable, and that are consistent with the circumstances affecting the work. [Effective February 1, 2018]

Circumstances affecting the work

.02 For the purposes of section 6400, the circumstances affecting the work would include:

- The terms of the appropriate engagement under which the work is being performed; and
- The application of the law to the work.

.03 The actuary would reflect the financial reporting standards specified by the terms of the appropriate engagement. Where financial reporting standards require methods and assumptions to be established by the preparers of the financial statements, the actuary would use the methods and assumptions specified by the preparers of the financial statements.

Plan provisions

.04 The actuary would determine the plan provisions with sufficient accuracy for the purposes of the valuation. Sources of information on plan provisions include:

- Current plan documents;
- Funding or underwriting arrangements;
- Collective bargaining agreements;
- Information regarding past practices;
- Cost-sharing arrangements between the plan sponsor(s) or plan administrator and plan members; and
- Communication between the plan sponsor or plan administrator and the plan members.

Prior plan provisions may be needed to analyze claims information from periods prior to the calculation date.

.05 The actuary would consider all benefits in accordance with the terms of the appropriate engagement that are to be payable under the post-employment benefit plan and would include provision for all such benefits expected to be paid under the plan.

Anticipated amendment or deferred recognition of a pending amendment

.06 The actuary's advice on a post-employment benefit plan may reflect an expected amendment to the plan if the amendment is definitive or virtually definitive, as appropriate based on the applicable financial reporting standard.

.07 The effective date of the amendment is the date at which the amended benefits take effect, as opposed to the date when the amendment becomes either definitive or virtually definitive.

.08 If an actuary is aware of an expected amendment to the post-employment benefit plan, but does not reflect the amendment in the work, then the actuary would report the event in accordance with the requirements for the disclosure of subsequent events.

Data

.09 In addition to the current plan membership and asset data, if any, the actuary would collect information on historical claims experience, such as nature of absence and benefit levels. Data may come from the plan sponsor or plan administrators or other sources, such as insurance carriers, brokers, or external third-party plan administrators.

.10 In identifying the data needed, the actuary would bear in mind the pertinent benefits (i.e., those applicable during retirement, disability, or following termination of employment). If applicable, the actuary may obtain claims data split by plan, by age, by location, by status (retiree, inactive, spouse, etc.) and by type of expense (drug, hospital, payment for loss of income, etc.).

.11 Where appropriate, in analyzing any relevant historical claims data, the data would be adjusted to reflect the trend in the cost of benefits between the reference period and the calculation date. Where appropriate, the actuary would also adjust past experience results to reflect non-recurring influences such as changes in the benefits offered, significant changes in the demographics of the group, changes in government programs, or unusual claims.

.12 Available data may have limited value or low credibility. Where the benefit cost for former members or current retirees is not fully credible or does not reasonably represent the likely benefit cost for similar future groups, the actuary may rely on the experience of active members or other sources of data that the actuary considers reasonable and relevant. Such other data would be adjusted appropriately for the expected differences between these groups and the group from which the data were drawn.

.13 The actuary may project data, including membership data and data with respect to claim costs from the effective date of the data to the calculation date, using appropriate extrapolation techniques. The actuary would not normally extrapolate membership data more than three years from the effective date of the membership data. The actuary may also use recent credible claims experience in the extrapolation.

Assumptions

.14 The assumptions that the actuary uses would be best estimate assumptions, unless otherwise specified in the relevant financial reporting standards or as otherwise selected by the preparers of the financial statements.

.15 Repealed

.16 In determining initial claim costs assumptions, the actuary would consider available claims experience with regards to items such as:

- Claimant age, member status, coverage category, and benefit type;
- Credibility; and
- Relevance to future periods and future benefit provisions.

.17 In situations where there are insufficient data with respect to claim costs—for example, if the post-employment benefit plan has only a small number of members or does not yet have any members in payment status—the actuary may develop the applicable assumptions based on experience with other similar plans.

.18 If the actuary is determining the assumption with respect to the future claims trend rate, where necessary, it may be divided into short-term and longer-term components. The short-term component would often be based on the level experienced in the recent past by the plan and plan members. The longer-term component would be consistent with the assumption regarding future changes in benefit programs and general economic conditions such as nominal Gross Domestic Product growth. The actuary would determine the period of time required to transition from the short-term trends to the longer-term trends.

Expenses

.19 The actuary's advice on a post-employment benefit plan would take account of expenses, including whether or not they are expected to be paid from the post-employment benefit plan's assets, if any.

Benefit commitments

.19.1 The actuary would include in the valuation of the post-employment benefit obligations the effect of a commitment to provide benefits not specified in the terms of the plan to the extent stipulated by the preparers of the financial statements.

.20 The actuary would consider, as part of the claims experience, the administration costs related to the adjudication of the claims including any related general administration expenses charged by the party adjudicating the claims and all applicable taxes. The actuary may also consider other expenses related to the post-employment benefit plan.

Extrapolations

.21 The actuary may extrapolate results of an earlier valuation using appropriate extrapolation techniques. The actuary would not normally extrapolate valuation results more than four years from the effective date of the membership data.

6420 Reporting: External User Report

.01 An external user report should:

- Include the calculation date and the report date;
- Describe the sources of membership data, plan provisions, the post-employment benefit plan's assets, if any, and historical claims data, if any, and the dates at which they were compiled;
- Describe the membership data and any limitations thereof, and any assumptions made about missing or incomplete membership data;
- Describe the tests applied to determine the sufficiency and reliability of the membership data and plan asset data for purposes of the work;
- Describe the assets, if any, including their market value and a summary of the assets by major category and the method used to value the post-employment benefit plan's assets;
- Describe the post-employment benefit plan's provisions, including the identification of any definitive or virtually definitive pending amendment of which the actuary is aware, and whether or not such amendment has been reflected in determining the plan's obligations;
- Describe any material accounting policies relevant to the work;

- Describe any commitment to provide benefits beyond the terms of the plan reflected in the valuation of post-employment benefit obligations;
- Disclose subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, and, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- Include all other provisions as required for disclosure purposes as per the terms of the appropriate engagement, such as:
  - Reporting the funded status at the calculation date and the applicable service cost or expected cost of new claims;
  - Describe any contingent benefits provided under the post-employment benefit plan and the extent to which such contingent benefits are included or excluded in determining the funded status and the service cost;
  - Describe any benefits that are not contingent benefits and that have been excluded in determining the funded status and the service cost;
  - Describing the method and period selected in connection with any amortizations;
  - If the valuation is an extrapolation of an earlier valuation, describe the method and any assumptions for, and the period of, the extrapolation; and
  - Stating whether or not the valuation and/or extrapolation conforms with the actuary's understanding of the financial reporting standards specified by the terms of an appropriate engagement. [Effective May 1, 2019]

.02 An external user report should provide the following four statements of opinion, all in the same section of the report and in the following order:

- A statement regarding membership data, which should usually be, "In my opinion, the membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding assumptions which should usually be, "In my opinion, the assumptions are appropriate for purposes of the valuation.";
- A statement regarding calculations, which should usually be, "In my opinion, the calculations have been made in accordance with my understanding of the requirements of [name financial reporting standard]"; and
- A statement regarding conformity, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective March 31, 2015]

.03 An external user report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation. [Effective June 30, 2013]

Membership data

.04 Any assumptions and methods used in respect of insufficient or unreliable membership data would be described.

Reference to other external reports

.05 The descriptions required in the external user report may be incorporated by reference to another actuarial valuation report prepared in accordance with accepted actuarial practice in Canada.

7000 – Social Security Programs

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7100 Scope

01. Part 1000 applies to work within the scope of this part 7000.

02. The standards in part 7000 apply to an actuary when performing or reviewing, advising on, or opining on work related to social security programs.

03. In Canada, the social security programs include the Canada Pension Plan (CPP), the Québec Pension Plan (QPP), the Old Age Security (OAS) program, and other similar plans that fall under the definition of social security program.

04. The standards in part 7000 do not apply to programs established solely or primarily for government employees, to workers' compensation programs, or to programs that primarily provide health insurance or property and casualty insurance.

7200 General

7210 Circumstances affecting the work

.01 The actuary's work on the valuation of benefit liabilities or other items contained in the financial statement of a social security program, or on the financing arrangements of a social security program, should take into account the circumstances affecting the work. [Effective February 1, 2018]

.02 The circumstances affecting the work would include

- terms of the relevant statute, regulations, and other binding authorities;
- relevant accounting standards and policies; and
- terms of an appropriate engagement under which the work is being performed;

and the circumstances affecting the work may include the financing policy of the social security program.

.03 The terms of an appropriate engagement would define the role of the actuary and the purpose of the work. The work of the actuary may include the provision of advice on the financing of the social security program, its financial condition, and any other actuarial item required under the terms of an appropriate engagement.

.04 The terms of an appropriate engagement may specify applicable policies of the social security program relevant to the work of the actuary. These policies may include a formal or informal financing policy, an accounting policy, and an investment policy.

.05 Significant terms of an appropriate engagement may stipulate one or more of

- use of a specified asset value or method of asset valuation; and
- use of a specified financing method based on a pre-determined financing objective.

.06 Objectives of financing specified by the terms of an appropriate engagement may include, but are not limited to, a specific funding target, the security of benefits, a principle of equity among generations, and/or a stable contribution rate over the long term.

.07 The actuary would take into account established practice (if relevant) when no law exists with regard to certain benefit provisions or financial measures (for example, the basis for future indexation of retirement benefits).

7220 Data

.01 Where sufficient, reliable, and relevant data are not available for the valuation of a specific benefit, the actuary should make appropriate assumptions and/or introduce appropriate methods to compensate for any perceived deficiencies in the data. [Effective October 15, 2017]

.02 Sufficient, reliable, and relevant data may not be available to the actuary in various circumstances, for example,

- a newly established social security program;
- the relevant statute may have been amended to provide a new or revised benefit;
- an applicable policy of the social security program may have been recently revised; or
- the social security program administration practices may have recently changed.

.03 Where the data are not sufficient, not fully reliable, and/or not sufficiently relevant to expected future experience for a specific benefit, the actuary may consider taking one or more of the following actions:

- introducing appropriate assumptions regarding missing, incomplete, or unreliable data; and
- adjusting data and historical experience for the purpose of the work, as appropriate, to remove any perceived distortions, such as the effect of historical inflation or one-time benefit changes.

.04 For a newly established or substantially changed social security program, the actuary would take into account other relevant information, including relevant experience of comparable social security programs.

7300 Valuation

7310 Methods

.01 The actuary should value the social security program assuming that it continues indefinitely as a going concern. [Effective October 15, 2017]

.02 The actuary should select an actuarial cost method that is consistent with the circumstances affecting the work. [Effective February 1, 2018]

.03 The actuary's work should take into account the benefits, relevant policies, and administration practices of the social security program, as of the calculation date, and should take into account any virtually definitive amendment to these items that is expected to have a material effect on benefits, unless the circumstances affecting the work require otherwise. [Effective February 1, 2018]

.04 The actuary would use a valuation methodology that is consistent with the financing method used for the social security program. Two methods are available:

- An open group methodology, under which contributions and benefits of both current and future participants are considered, is most appropriate for pay-as-you-go and partially funded social security programs and may also be used for social security programs that are meant to be fully funded; and
- A closed group methodology, under which only current participants are considered, with or without their assumed future benefit accruals and contributions, is only appropriate for a fully funded social security program that is meant to be fully funded.

.05 For a social security program that is meant to be fully funded, the actuary would:

- Measure the funded status of the social security program under a closed group methodology; and
- If also using an open group methodology, disclose the relationship between the social security program's current assets and the present value of its future contributions and the present values of its current and anticipated future liabilities over the projection period.

.06 Based on the circumstances affecting the work, the actuary may judge an alternative valuation methodology to be more appropriate. That approach would be used with justification communicated in the report.

.07 The projection period used in the actuary's work should be sufficient considering the circumstances affecting the work. [Effective February 1, 2018]

Amendments and subsequent events

.08 The actuary's valuation of the social security program would reflect all virtually definitive amendments of which the actuary is aware on the calculation date, including those amendments with an effective date after the calculation date. Where the circumstances affecting the work require otherwise, the actuary may exclude the effect of a known virtually definitive amendment, but the actuary would disclose the effect of such amendment.

7320 Assumptions

.01 The actuary should select assumptions that reflect the projection period and the expectation that the social security program will continue indefinitely as a going concern, but may adjust such assumptions to reflect short-term considerations, where appropriate. [Effective October 15, 2017]

.02 The actuary should select either best estimate assumptions or best estimate assumptions modified to incorporate margins for adverse deviations to the extent, if any, mandated by law or by the circumstances affecting the work, and should provide the rationale for the decision made with respect to the inclusion or exclusion of margins. [Effective February 1, 2018]

.03 Where a social security program has a policy or history of providing ad hoc adjustments to contributions or to benefits, or a periodic update of parameters of the program, such as the maximum insurable earnings, the actuary should recognize such policy or history when valuing the social security program by selecting assumptions consistent with such policy or history as appropriate, unless a virtually definitive decision to discontinue such adjustments or updates has been taken by the social security program. The actuary should value the social security program with and without any assumed ad hoc adjustments. [Effective October 15, 2017]

.04 The actuary would consider any automatic balancing mechanisms that exist in a social security program when selecting the assumptions. The actuary would consider to what extent the social security program is "immunized" from the volatility of some variables by the automatic balancing mechanisms.

7330 Economic Assumptions

.01 The needed economic assumptions may include

- the discount rate;
- the expected rate of investment income;
- the expected investment and administrative expenses;
- the expected rate of general inflation;
- the expected real wage growth;
- the expected labour force participation rate; and
- the expected unemployment rate.

.02 The economic assumptions needed would depend on the nature of the benefits that are being valued, and may vary by year.

.03 The actuary would develop and disclose separate nominal assumptions, but may prefer to complete the calculations using rates that are net of inflation, net of expenses or net of some other factor.

.04 When determining the best estimate assumption for the expected rate of investment income, the actuary would take into account the expected pattern of risk-free rates of return, the expected additional investment return on the assets of the social security program at the calculation date, if any, and the expected investment policy after that date. The actuary would provide justification for the expected additional investment return. Possible justifications include

- additional returns over risk-free rates expected to be earned on non-risk-free fixed income assets of the type and quality owned on the reporting date and expected to be acquired pursuant to the investment policy of the social security program;
- additional returns over risk-free interest rates expected to be earned on other types of investments, including publicly traded common or preferred equities, private placements, real estate, and private equity; and
- projected composition of the investment portfolio in future years.

In establishing the assumption for the expected rate of investment income, the actuary would assume that there would be no additional returns achieved, net of investment expenses, from an active investment management strategy compared to a passive investment management strategy except to the extent that the actuary has reason to believe, based on relevant supporting data, that such additional returns will be consistently and reliably earned over the long term.

05 The expected investment expenses would depend on the investment policy of the social security program and the types of investments held and projected to be held in the future.

.06 The assumed expected rate of investment income need not be a flat rate but may vary from period to period.

7340 Non-economic Assumptions

.01 When setting non-economic assumptions, the actuary would reflect all material contingencies.

.02 The needed non-economic assumptions may include

- the benefit take-up rates;
- the expected fertility rate;
- the expected migration rate; and
- the expected mortality and morbidity rates.

7350 Margins for Adverse Deviations

.01 The actuary should not include any margins for adverse deviations when the circumstances affecting the work require a best estimate calculation. [Effective February 1, 2018]

.02 The actuary should include one or more margins for adverse deviations when the circumstances affecting the work require such margins. A non-zero margin should be sufficient, without being excessive. The overall provision for adverse deviations resulting from the application of all margins for adverse deviations should be appropriate in the aggregate. [Effective February 1, 2018]

.03 If the actuary is required by the circumstances affecting the work to use a margin for adverse deviations that is outside the range that the actuary considers appropriate, the actuary may use such imposed assumption, but the actuary should disclose that the margin is outside of the appropriate range and disclose the reason for using such margin. [Effective February 1, 2018]

.04 Examples of situations where the circumstances affecting the work might require an unbiased calculation include

- the legislation governing the social security program requires an unbiased calculation; or
- the social security program's financing policy requires the use of best estimate assumptions.

.05 Examples of situations where the circumstances affecting the work might require the inclusion of one or more margins for adverse deviations include

- the relevant legislation or financing policy requires inclusion of margins for adverse deviations; or
- the level of uncertainty or volatility around a particular assumption is high, and not considered to be sufficiently mitigated by the underlying adaptability of the social security program.

.06 Where the actuary includes a margin for adverse deviations, the actuary would provide the rationale for inclusion of the margin and for the selection of the specific amount of the margin. The rationale may include considerations such as

- the financing policy of the social security program;
- the relative importance placed on the balancing of competing interests (e.g., benefit security versus cost of the social security program);
- the level of uncertainty inherent in the assumption;
- the level of reliability or credibility of the data or historical information upon which the assumption is based;
- the asset/liability mismatch risk; and
- the legislative or other restrictions on the ability to mitigate past adverse experience.

7360 Sensitivity Testing

.01 The actuary should perform sensitivity testing of adverse scenarios to illustrate plausible material risks to which the social security program may be exposed and to aid in the understanding of the effect of adverse changes to assumptions. [Effective October 15, 2017]

.02 The actuary may also perform sensitivity testing of favourable scenarios.

.03 When selecting the assumptions and scenarios for sensitivity testing, the actuary would consider the circumstances affecting the work, and would select those assumptions that have a material impact on the valuation. The actuary may consider the use of testing of integrated sensitivity scenarios, for example, the effect of a deep and prolonged recession.

.04 Assumptions tested may include, but are not limited to, the following:

- investment rate;
- real wage growth;
- labour force participation rates; and
- mortality rates.

7400 Experience Analysis

.01 The actuary should conduct an experience analysis, including a comparison of actual and expected experience for the period between the prior calculation date and the current calculation date. [Effective October 15, 2017]

.02 The actuary should conduct a reconciliation of the main results of the social security program valuation between the prior calculation date and current calculation date. The reconciliation should include an analysis and itemization of the changes in the methodology and assumptions used, legislative amendments that occurred, or other components of the valuation that contributed to the change in the main results. [Effective October 15, 2017]

.03 The actuary's analysis would include all significant experience variations. At a minimum, the actuary's analysis would consider the impact of any significant changes to the assumptions or methods used, any significant changes to the benefits or policies of the social security program, gains or losses due to investment returns on the social security program's assets, legislative changes, and any other areas where the difference between actual and expected experience is significant.

7500 Reporting on the Valuation of a Social Security Program

.01 For work pursuant to this part, the actuary should prepare a report that:

- states the calculation date and the report date of the actuarial opinion given;
- identifies the legislation or other authority under which the work is completed;
- describes the significant terms of the appropriate engagement that are material to the actuary's work, including the purpose of the work;
- describes the sources of the participants data, program provisions and policies, and assets, if any, and the dates at which they were compiled;
- describes the data used for the valuation and any limitations thereof, and any significant assumptions made about insufficient or unreliable data;
- describes the social security program's provisions, significant policies, and relevant administration practices, including the identification of any amendments made since the prior calculation date, and the effect of such amendments on the program's financial condition;
- describes the social security program's source(s) of financing;
- describes any automatic balancing mechanisms of the social security program;
- describes any definitive or virtually definitive amendment, policy change or change to administration practice, confirms whether or not such amendment or change has been reflected in the valuation, and identifies the effect of such amendment or change on the program's financial condition;
- discloses any subsequent events of which the actuary is aware, whether or not the events are taken into account in the work, or, if there are no subsequent events of which the actuary is aware, include a statement to that effect;
- describes the nature and extent of material risks faced by the social security program, and the approach taken by the actuary to assess those risks;
- states that the assumptions are best estimates, where that is the case, or discloses the aggregate provision for adverse deviations in the results, where the assumptions include margins for adverse deviations;

- describes the methodology used to assess the financial condition of the social security program at the calculation date. The description of the methodology should specify:
  - whether it is based on a closed or open participants group, and
  - how any automatic balancing mechanisms, if present, are incorporated;
- presents the projections of the components of the program's cash flows, including the contributions, benefits, administrative expenses, and investment income, if any;
- presents the key results of the valuation with and without any assumed ad hoc adjustments;
- states the key contribution rates required for the social security program, if applicable;
- describes and quantifies a reconciliation of the actual and expected experience with respect to the assets, if applicable, expenditures, and key contribution rates or other indicators of the social security program from the prior calculation date to the current calculation date; and
- describes sensitivity or scenario testing performed for key assumptions and reports the results of such testing.

Depending on the terms of the engagement, the report should:

- state the prior calculation date and next calculation date, as applicable;
- describe the social security program's assets, if any, including their market value, the assumptions and methods used to value the assets, and a summary of the assets by major category;
- state the financial condition of the social security program; and
- if the social security program is meant to be fully funded, state:
  - its funded status at the calculation date under a closed group methodology;
  - if also using an open group methodology, the extent to which the social security program's current assets and the present value of its future contributions cover the present values of its current and anticipated future liabilities over the projection period under an open group methodology;

  and describe the differences between the above two measures. [Effective February 1, 2018]

.02 The report should provide the following five statements of actuarial opinion, all in the same section of the report and in the following order:

- A statement regarding the data, which would usually be, "In my opinion, the data on which the valuation is based are sufficient and reliable for the purpose of the valuation.";
- A statement regarding the assumptions, which would usually be, "In my opinion, the assumptions used for the purpose of the valuation are reasonable and appropriate, both individually and in aggregate.";
- A statement regarding the methods, which would usually be, "In my opinion, the methods employed in the valuation are appropriate for the purpose of the valuation.";
- If applicable to the mandate, a statement certifying the required key contribution rates or other measures to finance the social security program. The statement may take the form of:

  "Based on the results of this valuation, I hereby certify that the [name(s) of key contribution rate(s) and/or other measure(s)] to finance the [name of social security program] is [X.XX]% for the year [YYYY] and thereafter";
- A statement regarding conformity to accepted actuarial practice, which should be, "This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada." [Effective October 15, 2017]

.03 The report should be sufficiently detailed to enable another actuary to examine the reasonableness of the valuation and to enable stakeholders, policymakers, and other interested parties to make informed decisions regarding the social security program. [Effective October 15, 2017]

.04 There are several measures the actuary may use to present the results, including

- projected cash flows and ending positions,
- discounted cash flows, and/or
- contribution rates required.

.05 The actuary may be asked to answer questions regarding the financial condition of the social security program, such as the estimated effect from changing an assumption used in the most recent valuation. In such instances, the actuary would specify the purpose and scope of the work and any limitations or constraints that apply to the interpretation of the results of the work compared to the results of the most recent valuation. If an actuarial opinion is required for such work, the actuarial opinion would be similarly adjusted.

.06 The circumstances affecting the work may result in a deviation from accepted actuarial practice in Canada. For example, the applicable legislation or the terms of engagement may require that the actuary use a margin for adverse deviations that is outside the range that the actuary considers appropriate. In such case, the actuary would disclose such deviation in the report, and if practical, useful, and appropriate under the terms of the engagement, report the results of applying accepted actuarial practice.

Canadian Institute of Actuaries / Institut canadien des actuaires

Draft Educational Note

Comparison of IFRS 17 to Current CIA Standards of Practice

Committee on International Insurance Accounting

September 2018

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The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

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MEMORANDUM

To: Members in the life and health insurance and P&C insurance areas

From: Faisal Siddiqi, Chair
Standards and Guidance Council

Les Rehbeli, Chair
Committee on International Insurance Accounting

Date: September 13, 2018

Subject: **Draft Educational Note: Comparison of IFRS 17 to Current CIA Standards of Practice**

The Committee on International Insurance Accounting (IIAC) has prepared this draft educational note to identify the key differences in the measurement of insurance contract liabilities between IFRS 17 and current CIA Standards of Practice and supporting guidance.

The information presented in this draft educational note is intended to alert Canadian valuation practitioners to key items that will affect their work. Additional information that provides more detail appears in International Actuarial Association (IAA) guidance or other CIA documents. This draft educational note is not intended to be a complete guide, but rather a roadmap for change that identifies the key similarities and differences between IFRS 17 and current valuation approaches in Canada. This draft educational note is consistent with the draft of International Actuarial Note (IAN) 100 received by the IIAC for comment on March 28, 2018, and will remain as draft until IAN 100 is finalized.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents, this draft educational note has been prepared by the IIAC and received approval for distribution from the Standards and Guidance Council on September 4, 2018.

Questions or comments regarding this draft educational note may be directed to Les Rehbeli at les.rehbeli@oliverwyman.com or to Lesley Thomson at lesley.thomson@sunlife.com.

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1. Introduction

International Financial Reporting Standard (IFRS) 17 *Insurance Contracts* is a new standard that will become effective in Canada on January 1, 2021. IFRS 17 establishes principles for the recognition, measurement, presentation, and disclosure of insurance contracts within the scope of the standard.

IFRS 17 specifies the basis for measurement (valuation) of insurance contract[1] liabilities. While there are many similarities to the current CIA Standards of Practice for valuation of insurance contract liabilities, there are also many differences.

This draft educational note provides actuaries with an overview of the similarities and significant differences of IFRS 17 measurement of liabilities compared to current practice in Canada. This draft educational note is not a comprehensive guide to IFRS 17. Actuarial guidance is provided or will be provided by the following sources:

- International Actuarial Association (IAA);
- CIA Committee on Life Insurance Financial Reporting (CLIFR);
- CIA Committee on Property and Casualty Insurance Financial Reporting (PCFRC); and
- CIA Committee on Workers' Compensation.

This draft educational note focuses on life and property and casualty (P&C) insurance contracts. Workers compensation contracts are not discussed in this educational note, as the CIA Committee on Workers' Compensation is producing separate guidance on this topic.

2. IFRS 17 Overview and Comparison to Current Practice

IFRS 17 applies to any contract that is classified as an insurance contract, regardless of whether the issuing entity is an insurer. IFRS 17.B2–B30 provides guidance on the definition of an insurance contract. Most Canadian policies that are currently classified as insurance contracts will continue to be classified as insurance contracts under IFRS 17, although there are a few exceptions. Section 3 provides additional detail on this topic.

Many Canadian life insurance contracts contain features that are akin to investment contracts or service contracts. IFRS 17 requires the entity to review insurance contracts and identify any embedded derivatives, investment components, and service components and assess whether those components are *distinct* (as defined in IFRS 17.B31–B32). Section 4 provides additional detail on this topic.

The measurement of insurance contract liabilities under IFRS 17 includes three "building blocks":

[1] The term "insurance contracts" as used in this draft educational note includes all contracts within the scope of IFRS 17 (i.e., including investment contracts with discretionary participation features and reinsurance contracts held).

1. **Present value of future cash flows.** Conceptually, this is similar to the current CIA liability without provisions for adverse deviations (PfADs), although there are several important differences as discussed in sections 6–8.
2. **Risk adjustment for non-financial risk**. Conceptually, this is similar to current CIA PfADs for non-economic risk, with differences as discussed in section 9.

   The sum of the present value of future cash flows and the risk adjustment for non‑financial risk is called the *fulfilment cash flows* (FCF).
3. **Contractual service margin (CSM).** The CSM represents the unearned profit from a group of insurance contracts. At contract inception, if the FCF including all cash flows of the contract (i.e., including acquisition expenses and all premiums) is less than zero, the CSM is established to offset that negative amount so there is no front-ending of profit. The CSM is then released into income as services are provided. The CSM is a new concept versus current CIA standards, which allow front-ending of profit at issue.

The general measurement approach described in IFRS 17 (which we will refer to as the GMA in this educational note) is the default approach to valuation. *Insurance contracts with direct participation features* (as defined in IFRS 17.B101) are subject to some different requirements (called the variable fee approach (VFA) in this educational note) as discussed in section 5.

Furthermore, there is an option to use the simplified *premium allocation approach* (PAA) for contracts meeting the eligibility requirements in IFRS 17.53. The PAA is available for short term contracts (coverage period of one year or less), and may also be available for longer duration contracts if the PAA provides a reasonable approximation to measurement under the GMA over the life of the contract. See section 5.

3. Classification of Contracts

3.1 General

According to IFRS 17, an insurance contract is “a contract under which one party (the issuer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder.” The definition of “insurance risk”, the meaning of “significant” in this context, and other guidance clarifying the classification of contracts is in IFRS 17.B2–B30.

IFRS 4 was effective in Canada on January 1, 2011. Since then, classification of contracts in Canada has been guided by the educational note *Classification of Contracts under International Financial Reporting Standards*, June 2009 (209066).

Contract classification under IFRS 17 is largely the same as IFRS 4. The only difference is described in IFRS 17.BC67, which says that the time value of money should be considered when assessing whether insurance risk is significant.

3.2 Life and Health Insurance

For most life and health insurance products in Canada, classification is not expected to change under IFRS17. For convenience, appendix A provides a summary of the classification of common Canadian life and health insurance products.

3.3 P&C Insurance

P&C contracts provide coverage for all risks other than life, including automobile, property and liability insurance. Such contracts that satisfy the definition of an insurance contract under IFRS 4 would generally continue to fall within the scope of IFRS 17.

3.4 Reinsurance

Reinsurance contracts issued are treated in the same manner as direct written contracts under IFRS 17. Classification under IFRS 17 would be the same as under IFRS 4 except as discussed in IFRS 17.BC67 as noted above.

Reinsurance contracts held (i.e., ceded) are treated as separate contracts under IFRS 17 and therefore will require their own classification (rather than just being cash flows of the direct underlying contract as under IFRS 4).

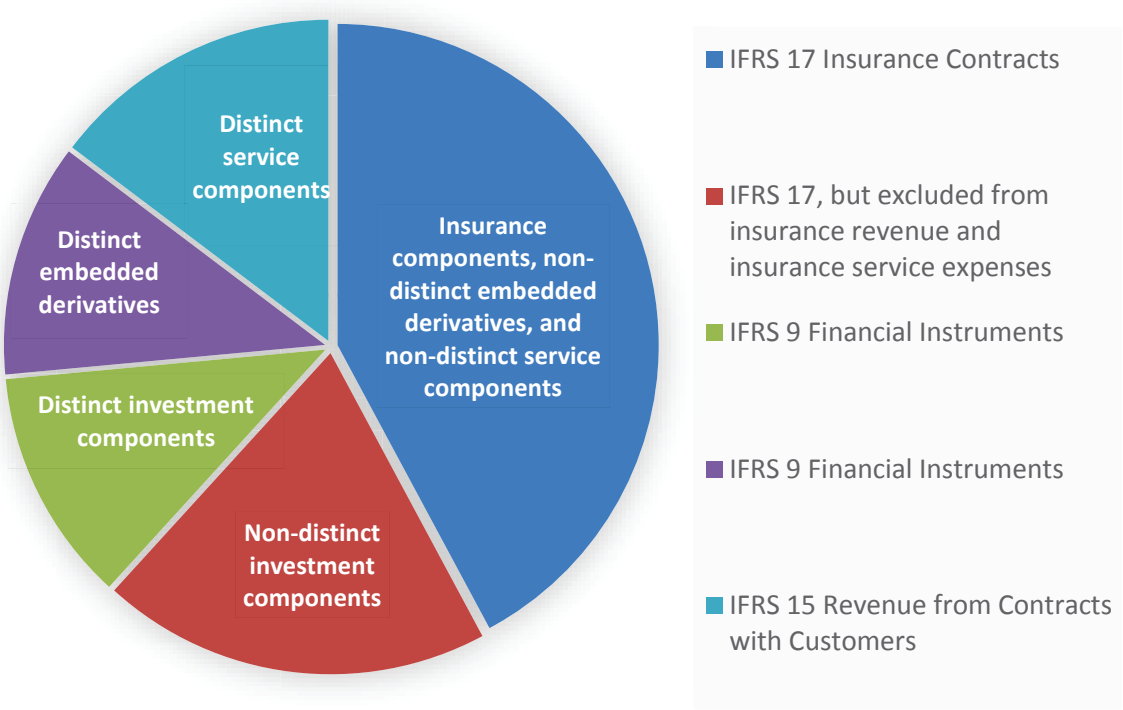
Under IFRS 17, lapse risk and expense risk in a direct written contract are not considered insurance risks, because the risk is created by the contract itself (i.e., lapse/expense cannot be an insured event). However, the transfer of lapse or expense risk from one entity to another would meet the definition of insurance risk from the perspective of the entity assuming the risk. Therefore, it is possible for a reinsurance contract issued (i.e., assumed) to be within the scope of IFRS 17 while the corresponding contract that transfers risk to the reinsurer is not.

Also, because reinsurance contracts held are treated as separate contracts under IFRS 17, there will not necessarily be a one-to-one correspondence between a reinsurance contract held and its underlying direct contract(s). In particular, the “contract” might be the entire reinsurance treaty, covering cessions over a number of years.

4. Separation of Contract Components

4.1 General

IFRS 17 requires identification of certain components within insurance contracts and, if distinct, separate measurement and reporting of those components. The following chart summarizes:



The comparison of these IFRS 17 requirements to current (IFRS 4) requirements is as follows:

- Embedded derivatives: under IFRS 4, the entity has options for separate reporting that are not available under IFRS 17.
- Distinct investment components: under IFRS 4, separate reporting of deposit components is permitted but not required under certain conditions, and there is no requirement to identify deposit components if separate reporting is not elected.
- Non-distinct investment components: under IFRS 4, there is no requirement to identify deposit components that are not eligible for separate reporting.
- Service components: under IFRS 4, separate reporting is not permitted, and there is no requirement to identify service components (whether distinct or not).

4.2 Embedded Derivatives

Guidance for the identification of embedded derivatives and the criteria for whether they are distinct is in IFRS 9 *Financial Instruments*. This guidance is the same as the corresponding current guidance in International Accounting Standard (IAS) 39. If an embedded derivative is found to be non-distinct, the entire contract is measured under IFRS 17 and there are no special presentation or disclosure requirements for the embedded derivative component. Distinct embedded derivatives would be measured under IFRS 9 *Financial Instruments* and reported with investment contracts in the financial statements.

Under IFRS 4, the entity had the option to separate some non-distinct embedded derivatives, while under IFRS 17, separation is required for distinct embedded derivatives and prohibited for non-distinct embedded derivatives.

Also, IFRS 4 included an exception for a policyholder option to surrender an insurance contract that was not carried forward to IFRS 17. However, it is expected that this change will have no impact in practice, because surrender options would not be distinct from the host contract.

4.3 Investment Components

Examples of non-distinct investment components include the cash surrender value of a life insurance contract, term certain payments in a life contingent annuity contract, and the account value (net of any surrender charges) of a universal life insurance contract.

The insurance contract including non-distinct investment components would be measured under IFRS 17. However, insurance revenue and insurance service expenses reported in the Statement of Financial Performance (the income statement) exclude the portion related to the non-distinct investment components. For revenue, this will require splitting expected claims between amounts payable only on death (death benefit minus surrender benefit) and amounts payable on either death or surrender (surrender benefits).

Guidance for determining whether investment components are distinct or not appears in IFRS 17.B31–B32. Examples of investment components that might be distinct include dividends on deposit, and funds held under underwriting agreements. Distinct investment components would be measured under IFRS 9 *Financial Instruments* and reported with investment contracts in the financial statements.

Appendix B includes examples of investment components and considerations for determining whether they are distinct.

4.4 Service Components

Guidance for identifying whether service components are distinct is in IFRS 17.B33–B34. Distinct service components would be measured under IFRS 15 *Revenue from Contracts with Customers* and reported with other service contracts on the financial statements.

An example of a possible distinct service component is claims adjudication services provided along with reinsurance protection. Note that the assessment of whether this service component is distinct would be performed both by the reinsurer (for the reinsurance contract issued) and the cedant (for the reinsurance contract held). There is no requirement for the assessment to be the same, even if the reinsurer and the cedant belong to the same group of entities.

There is no need to identify non-distinct service components.

Appendix C includes examples of service components.

5. Selection of Measurement Approach for Liability for Remaining Coverage

5.1 Overview

Under IFRS 17, contracts are measured using the general measurement approach (GMA) with the following exceptions, which are discussed further in the sections of this draft educational note that follow:

- Contracts satisfying the criteria in IFRS 17.53 may be measured using the premium allocation approach (PAA). Note that the liability for incurred claims (LIC) would be measured using the GMA (but without CSM); only the liability for remaining coverage (LRC) is measured using the PAA.
- Insurance contracts with direct participation features (IFRS 17.B101) are measured using the variable fee approach (VFA).
- Reinsurance contracts held are measured using either the GMA or the PAA. However, there are some differences in measurement that apply to reinsurance contracts held as outlined in IFRS 17.63-70. Reinsurance contracts held are never measured using the VFA.

Note that reinsurance contracts held (i.e., ceded) are measured as separate contracts under IFRS 17, and it is possible for a reinsurance contract held to be measured using a different method than the underlying direct contracts being ceded.

5.2 Premium Allocation Approach (PAA)

The PAA is a simplification of the GMA that may be used for any contracts with a coverage period of one year or less, and any longer contracts where measurement under the PAA would not differ materially from the GMA over the life of the contract. Eligibility for the PAA is assessed at inception of the group of contracts. Considerations in assessing whether the PAA would provide a reasonable approximation to the GMA can be found in IFRS 17.54, chapter 9 (Premium Allocation Approach) of International Actuarial Note (IAN) 100 of the IAA, and appendix D of this draft educational note.

The PAA simplification applies to the LRC only. The LIC is measured using the GMA (but without CSM).

If the PAA is selected, the LRC at issue is equal to premiums received (i.e., unearned premiums (UEP) less premiums receivable), less (if elected) deferred acquisition costs (DAC). The entity has the accounting policy choice to expense or defer acquisition costs (IFRS 17.59(a)) if the coverage period is one year or less. The LRC for subsequent periods follows the pattern of UEP less premiums receivable less DAC. LIC would be established using the GMA (but without CSM) for any incurred claims, including claims incurred but not yet reported or settled as of the valuation date.

Under current practice, the LRC is analogous to the present value of future cash flows with PfADs for non-economic risk for life insurance, and to premium liabilities for P&C insurance. For life insurance, UEP less DAC can be used whenever it provides a reasonable approximation to the explicit valuation approach. For P&C insurance, the booked liability is the higher of UEP less DAC and the explicit valuation. The following differences between IFRS 17 and current practice are worth noting:

- Criteria: IFRS 17 allows the PAA approach to be used for all contracts with a coverage period of one year or less, with no requirement to assess whether the PAA is a reasonable approximation to the GMA. Current CIA standards would allow UEP minus

DAC to be used only if it is a reasonable approximation to the explicit valuation approach.

- Deferral of acquisition costs: IFRS 17 allows the entity to choose whether to defer acquisition costs or expense them directly if the coverage period is one year or less. Current CIA standards require deferral of acquisition costs for life insurance (through extending the term of the liability), while for P&C contracts, there is no deferral of acquisition costs in the explicit valuation, but deferral if UEP less DAC is held.
- Amount of deferrable acquisition costs: The amount of acquisition expenses considered deferrable could be different. IFRS 17 allows deferral of acquisition expenses considered directly attributable to the portfolio of insurance contracts.
- Discounting of the LRC: IFRS 17 allows the entity to choose not to reflect the time value of money (i.e., discount cash flows) if the coverage period is one year or less or the coverage period is longer but the effect of discounting is not significant. Current CIA standards require the time value of money to be taken into account, either directly or, for life insurance, as part of the assessment of whether UEP minus DAC is a reasonable approximation to an explicit approach.
- Discounting of the LIC: Under IFRS 17, if the entity applies the PAA to the LRC, the time value of money and the effect of financial risk can be ignored in measuring the LIC if the LIC cash flows are expected to be paid or received in one year or less from the date the claims are incurred.

5.3 Variable Fee Approach (VFA)

The term “variable fee approach” (VFA) as used in this draft educational note refers to the special requirements related to the measurement of insurance contracts with direct participation features (direct par) as defined in IFRS 17.B101. Measurement of the liability for direct par contracts is based on the same building blocks as the GMA, but with special treatment of the CSM (and other comprehensive income (OCI)) if this presentation option is elected). Note that the term “participation features” in IFRS 17 is a different concept from “participating policy” as defined in the Canadian Insurance Companies Act.

5.4 Measurement Approach for Typical Canadian Products

Most Canadian individual life insurance products would be valued using the GMA.

The VFA approach would likely apply to segregated fund contracts and possibly some participating life insurance contracts. Also, some variable or index-linked universal life products could meet the definition of direct par contracts.

The PAA approach would be an option (for the LRC) for most P&C contracts. Many P&C contracts would have a coverage period of one year or less and therefore be eligible automatically. P&C contracts with longer terms (e.g., many Québec auto contracts have a two-year term) might also be eligible for the PAA, but the entity would need to assess the appropriateness of the approximation to the GMA. Some P&C products, such as warranty or mortgage default contracts, may not be eligible, due to either the length of the contracts or the

year-to-year variation in claim occurrence that is typically observed, as these factors may indicate the PAA is not a reasonable approximation to the GMA.

The PAA would also be an option (for the LRC) for many group life and health contracts, as these typically are annually renewable. Sometimes, group contracts provide rate guarantees for longer than one year, and in such cases the entity would need to assess whether the PAA approach produces a reasonable approximation to the GMA.

Generally speaking though, if the UEP minus DAC approximation is currently used for reporting, there is a good chance that the PAA would produce a reasonable approximation to the GMA. Further, if the current approach is to use UEP minus DAC with an adjustment (e.g., premium deficiency reserve), it might be appropriate to use the PAA with the same adjustment under IFRS 17.

Appendix E contains a list of typical Canadian products and the measurement approach that might be used. An entity would assess each of its contracts to determine which approach is most appropriate.

6. Measurement Considerations

6.1 Level of Aggregation

IFRS 17 requires entities to identify *portfolios* of contracts, which comprise contracts subject to similar risks and managed together. Contracts in different product lines would generally not be in the same portfolio as they would not be expected to have similar risks (IFRS 17.14). Portfolio is the level of aggregation at which accounting policy choices (e.g., whether to apply the OCI option) apply. Note that reinsurance contracts held would be in different portfolios than the underlying direct contracts because the risks are not similar.

IFRS 17 also requires portfolios of contracts to be divided into *groups* of contracts according to IFRS 17.16–23. *Group* is the unit of account for the measurement of the CSM and some presentation requirements (e.g., IFRS 17.78). Under IFRS 17, contracts cannot be split into components (e.g., for different coverages) and assigned to different groups. However, a (legal) contract would be split into different contracts if needed to reflect the substance of the contractual rights and obligations (IFRS 17.2).

In Canada, because there is currently no CSM, there is no analogous requirement to “group” contracts. As a result, it is common to measure coverages separately, and sometimes report them on separate lines of the financial statements. Under IFRS 17, cash flows for different components/coverages can still be projected and measured separately, but each component/coverage would be allocated to the appropriate group(s) for the purpose of measuring CSM and the presentation requirements of IFRS 17.78. This could create significant administrative hurdles, especially combined with the requirement to measure liabilities using premiums received rather than premiums due.

IFRS 17 does not specify the level of aggregation to determine the risk adjustment for non-financial risk, though it would be consistent with the compensation the entity requires for bearing uncertainty (IFRS 17.37). That is, it would be set at the level that best represents the entity’s view (i.e., taking diversification benefits into account or not) of the compensation

required to bear uncertainty. If determined at a higher level of aggregation than group, the risk adjustment for non-financial risk would be allocated to the different groups in a reasonable manner. Under current CIA standards, PfADs should be appropriate in aggregate, but this takes into account both financial and non-financial risk and there are varying practices in how diversification benefits are recognized. Therefore, there could potentially be a change to the level of aggregation at which the risk adjustment for non-financial risk (analogous to PfADs for non-economic risk) is set.

Other than expenses, there is no specific requirement regarding the level at which assumptions are set under IFRS 17. Assumptions can be set at the level that is most appropriate to estimate future cash flows, with future cash flows allocated to groups in a reasonable way. This is the same as current CIA standards, so it is unlikely that changes will be required.

The level of aggregation for expenses (both future cash flows and deferred acquisition expenses) in the measurement of liabilities under IFRS 17 is portfolio. Expenses considered directly attributable to a portfolio are then allocated to groups within the portfolio. Under current CIA standards, there is no specific level of aggregation set for expenses, though in practice, portfolio (or something similar) is likely the level at which expenses are set, so little change is expected other than the new requirement to allocate expenses to groups.

However, the requirement to include acquisition expenses in presentation and measurement of liabilities is new, so the identification of directly attributable acquisition expenses for portfolios is new (see section 7.4).

The level of aggregation for IFRS 17 reporting (disclosure) purposes might also necessitate some administrative changes. For example, incurred claim liabilities that are currently reported in aggregate (e.g., for reinsurance contracts held) might need to be separated among groups to meet the requirements of IFRS 17.78.

6.2 Contract Boundary

IFRS 17.33 requires the entity to identify the contract boundary (IFRS 17.34) for each contract so that only cash flows related to claims incurred within the boundary of the contracts in the group are included in the estimates of future cash flows.

For most contracts, the contract boundary under IFRS 17 will be evident, and equal to the term of the liability (life insurance) or the term of the policy (P&C insurance). Fully guaranteed whole life insurance, for example, would have a contract boundary that extends to the end of the life of the policyholder. Typical group life and health and P&C contracts that are annually renewable would have a contract boundary that ends at the next renewal date.

Possible differences from current practice include the following:

- Bias towards conservatism: For life insurance contracts, the concept of contract boundary is similar to the term of the liability. Where the term of the liability is uncertain, or where extending the term of the liability would increase the liabilities, current CIA standards require the actuary to be conservative. For example, paragraph 2320.03 requires the actuary to include future renewals only if the resulting liability is larger; and paragraph 2320.19 urges the actuary to err on the side of caution where the

term is not obvious. However, there is no such concept in IFRS 17, which could lead to a difference between the term of the liability and the contract boundary. For example, if a renewal (at which the term of the liability/contract boundary might end) is expected to be loss-making (even though the entity has the right to increase premiums to avoid loss), the loss would be included in the IFRS 4 liabilities, but not in the IFRS 17 liabilities.

- Consideration of rights and obligations of both parties: Under IFRS 17, the rights and obligations of both parties to the contract are considered when determining the contract boundary, while under current CIA standards, only the rights and obligations of the entity are considered. For example, if the entity has the right to compel the policyholder to pay premiums, the IFRS 17 contract boundary would not end, while the IFRS 4 term of the liability would end if extending the term would reduce the liabilities.
- Coverages within contracts: The treatment of coverages within a contract may be different. For life insurance contracts, current CIA standards (paragraph 2320.19) require the actuary to consider the substance of the contract over the legal form in assessing the term of the liability. For example, a certificate under a group insurance contract that in substance is a collection of individual contracts (such as a creditor or association contract) would be considered as though it were an individual contract, each with its own term of liability. By contrast, under IFRS 17, one contract can have only one boundary, which in this case would be determined based on the terms and conditions of the group contract. However, IFRS 17 does require separation of contracts if required to reflect the substance of the obligations (IFRS 17.2) and cash flows are only within the contract boundary for coverages that create substantive rights or obligations at the reporting date (IFRS 17.34). Therefore, in practice there might be few changes required because of this difference.
- Constraints on repricing: The identification of contract boundary becomes more difficult when the entity is partially constrained in its ability to terminate or adjust the contract. IFRS 17.23, B62–B67 provide considerations for making this assessment. Generally, the considerations are similar to current practice, focusing on the extent of constraint placed on the entity, and the practical ability of the entity to make changes. However, one important difference is that the intent of the entity (to reprice or not) is not considered in setting the contract boundary under IFRS 17; rather, only the rights and obligations of the entities are considered. Also, under IFRS 17, in assessing the "practical ability" of the entity to make changes, commercial considerations would be ignored if the same considerations apply to new contracts.
- Extension of term of liability for deferred acquisition costs: Current CIA standards (life) allow extension of the term of the liability to account for deferred acquisition costs. This is common in the valuation of segregated fund products and some short duration group life and health contracts. Under IFRS 17, there is no corresponding concept because acquisition costs are considered directly in the measurement of liabilities.
- Segregated funds with material guarantees: Where segregated fund contracts contain material constraints, current CIA standards (paragraph 2360.07) require the term of the

liability be set to maximize the liability. The purpose of this adjustment is to ensure consistency with the treatment of similar segregated fund contracts without material constraints. This concept does not apply in IFRS 17. The contract boundary would be the full duration of the segregated fund contract if the entity has no right to adjust the contract. Whether cash flows associated with future deposits would be included depends on whether substantive rights or obligations associated with those future deposits exist at the reporting date. Generally speaking, if future deposits are treated the same as deposits on new contracts, they would be excluded.

- Segregated funds supported by hedging strategy: Where hedging is used to manage segregated fund risk, current CIA standards permit the term of the liability to be extended under certain conditions. The existence of hedging is irrelevant to the determination of the contract boundary; however, IFRS 17 accomplishes the same objective through IFRS 17.B115–B116.

Examples of products for which the contract boundary determined under IFRS 17 is *potentially* different from the term of the liability under current practice include the following:

- Fully guaranteed individual life insurance contracts: The contract boundary would generally be the same as the term of the liability, and would be the lifetime of the individual contract. For insurance contracts with the option to convert to different coverages, the term of the liability under CIA standards would end at the date of conversion unless the conversion is expected to have a cost. Under IFRS 17, the contract boundary of such contracts would include the boundary of the coverage to which the contract converts.
- Adjustable individual life insurance contracts: The term of the liability would normally be the earliest date at which the entity can adjust the contract, unless extending the term increases the liability. Under IFRS 17, the contract boundary would be the earliest date at which the entity can adjust either the individual contract or the portfolio of contracts to which the individual contract belongs, with the added constraint given by IFRS 17.34(b)(ii) that "the pricing of the premiums for coverage up to the date when the risks are reassessed does not take account the risks that relate to periods after the reassessment date". If the product was priced by taking into account all of the future cash flows (e.g., level premiums), then the contract boundary would extend to the end of the life of the policyholder.
- Group employer/employee contracts: Typical contracts are annually renewable, although some contracts offer premium rate guarantees that extend beyond one year. The term of the liability under current practice would typically be the next renewal date, extended to account for premium rate guarantees if that increases the liability, and also sometimes extended to allow for deferred acquisition costs. Under IFRS 17, the contract boundary would be the date at which the premium rate guarantees expire.
- Cancellable contracts: If contracts are cancellable without penalty by both parties, the term of the liability under current practice would extend beyond the cancellation date if

that increases the liability unless it is expected that the contract will be cancelled. Under IFRS 17, the contract boundary would be the cancellation date[2].

- Group creditor/association contracts: Current practice varies on these products. Some entities view the individual certificates under the group contracts as individual contracts, each with its own term of the liability. Others might view the contracts as group contracts, and look solely to the terms of the group contract to determine the term of the liability. Under IFRS 17, a contract has a single boundary regardless of underlying components or coverages.
- Segregated fund contracts and annuity contracts: As noted above, the contract boundary will often be different than the current term of the liability, and would be determined based solely on the contract guarantees. For deferred annuity contracts that are classified as insurance contracts, the term of the liability under current practice would typically end at the date the credited interest rate is reset. Under IFRS 17, the contract boundary extends for the length of the insurance coverage.
- Title insurance: Title insurance is insurance against defects in the title to land or buildings. Under current Canadian practice, the insured event (the defect) is considered to have occurred before the contract was written, so the liabilities consist solely of claim liabilities (LIC under IFRS 17). Under IFRS 17, title insurance is described as "insurance against the discovery of defects in the title". As such, the insured event is discovery of the defect, so the contract boundary extends for as long as the policyholder owns the property or holds the mortgage on the property (depending on the type of title insurance policy). Insurance contract liabilities will include both LRC and LIC.
- Onerous contracts: If a contract has terms and conditions that are guaranteed and these will result in an onerous contract, then under IFRS 17 the entity would need to recognize the liability as soon as it is bound by the terms of the contract, which could be prior to the effective date of the contract. This may be different from current practice.
- Reinsurance contracts held: IFRS 17 requires reinsurance contracts held to be measured as separate contracts, including separate determination of the contract boundary. By contrast, under current CIA standards, the term of the liability is determined for the underlying direct contract only, and reinsurance cash flows are projected consistent with the term of the underlying direct contract, based on the assumption that the direct writer and the reinsurer exercise their contractual rights (e.g., the right to reprice or recapture) to their advantage (paragraph 2120.32). Under IFRS 17, it is possible for the boundary of a reinsurance contract held to be different than the boundary of the underlying direct contract(s). However, the boundary of a reinsurance contract held (ceded) will always be the same as the boundary of the corresponding reinsurance contract issued (assumed), because the rights and obligations of both parties are considered in determining the contract boundary.

[2] Under discussion. Similarly, treatment of coverages that can be withdrawn at any time.

7. Probability-Weighted Cash Flows

7.1 Comparison to Current Practice

IFRS 17.33 describes requirements for estimates of future cash flows to be incorporated in the GMA. In particular, estimates of future cash flows represent the probability-weighted mean of the full range of possible outcomes, considering all reasonable and supportable information available at the reporting date without undue cost or effort.

The concept of probability-weighted cash flows is broadly aligned with current practice to determine best estimate cash flows. It is unlikely that major changes to current processes will be required.

Below is a list of examples where differences from current practice might occur:

- **Assumptions that include implicit margins for adverse deviations (MfADs)**: IFRS 17 requires separate disclosure of the risk adjustment for non-financial risk. In current practice, the distinction between "best estimate" and "with PfAD" is not always quantified, though much of this would have been identified with Life Insurance Capital Adequacy Test (LICAT).
- **Cash flows that vary with assumptions related to financial risk**: (for example, credited rates on universal life contracts tied to economic scenarios, or cash flows linked to inflation). Current practice is to separate "best estimate" assumptions (e.g., the CIA-prescribed base economic scenario as defined in subsection 2330) from MfADs. However, under IFRS 17, provisions for financial risk are included in the present value of future cash flows on a market consistent basis. Stochastic modelling of market consistent economic parameters may be needed in these situations to determine the probability-weighted cash flows under IFRS 17.
- **Policyholder options**: Estimates of future cash flows take into account policyholder behaviour including the expected effect of anti-selection. This is true under current CIA standards, though the distinction between "best estimate" and "PfAD" is sometimes blurred. Also, if policyholder behaviour is expected to be linked to assumptions related to financial risk, the provision for financial risk would be included in the present value of future cash flows (rather than in PfADs).
- **Future taxes**: IFRS 17 excludes income taxes from estimates of future cash flows. This is different from current CIA standards, which require consideration of future income taxes. Premium taxes and investment income tax[3] are included as expenses of administering the contract under current practice, and this is expected to continue to be the case under IFRS 17.
- **Expenses:** Current CIA standards require the liability to include provision for ongoing policy-related expenses. IFRS 17 has a similar requirement, but restricts the expenses included in the valuation to those "directly attributable" to the portfolio. For life and health insurance, IFRS 17 "directly attributable" expenses will likely be a subset of the

[3] Under discussion

expenses included under current practice, but for P&C insurance, more expenses might be included in IFRS 17 than under current practice. Under IFRS 17, expenses related to reinsurance (ceded) are attributable to portfolios of reinsurance contracts held.

IFRS 17 requirements for reflecting changes in unit expenses (e.g., for changes in economies of scales) are similar to those in current CIA standards.

Also, IFRS 17 requires the identification of directly attributable acquisition expenses for initial measurement of the CSM and ongoing presentation (see section 7.4). Under current CIA requirements, acquisition expenses are only needed for valuation when DAC is used, and it is likely that directly attributable expenses under IFRS 17 will be a subset of those used for current DAC. For blocks where DAC is not used, the identification of directly attributable acquisition expenses will be new.

- **Reinsurance contracts held**: IFRS 17 requires reinsurance contracts held to be measured separately from the underlying direct contract(s), including separate consideration of the contract boundary. This can lead to different cash flows being included in the valuation. For example, if the terms of a reinsurance treaty are guaranteed with (say) a 90-day cancellation notice, then cash flows associated with expected (new) cessions over the next 90 days would be included in the measurement of the reinsurance contract held even though there is no corresponding underlying direct contract liability. This requirement is unlikely to have a significant impact on the measurement of the liability, but it could affect the CSM (which is separately reported).
- **Risk of non-performance by the issuer of the reinsurance contract**: Provision for the risk of non-performance by the reinsurer is included in both IFRS 17 and current CIA liabilities. In current Canadian practice, this provision may be implicit in the liability net of reinsurance. Under IFRS 17, this provision is included in the liability for reinsurance contracts held. IFRS 17.63 says the risk of non-performance includes “losses from disputes”. As with current practice, this refers to losses from known disputes and not the risk of losses arising from future disputes.

7.2 Treatment of Catastrophic Scenarios

IFRS 17.B40 states that “the scenarios developed shall include unbiased estimates of the probability of catastrophic losses under existing contracts.” In principle, all possible scenarios (both favourable and unfavourable) are to be considered in the analysis, along with an estimated probability, which may be very low.

Current practice often does not take explicit consideration of potential catastrophes and the associated probability. Outliers are often excluded or adjusted from experience if they are judged not to be representative of the true underlying distribution (usually because by including the observed event in the experience, too much weight is given to the observed event). Effectively, by making these adjustments, the actuary is assigning a low probability to the occurrence of that event, which is consistent with IFRS 17. Similarly, by not making explicit adjustment to reflect the potential for a catastrophic event that was not observed during the experience period, the actuary is assigning a low estimated value to such an event.

7.3 Cash Flows That Vary with Assumptions Related to Financial Risk

The projection of cash flows that vary with assumptions related to financial risk might require modification from current practice, which is often based on deterministic "best estimate" scenarios prescribed in the current CIA standards or on real-world stochastic scenarios that meet certain calibration criteria. These scenarios are not necessarily consistent with market prices as required under IFRS 17.

Estimates of cash flows that vary with assumptions related to financial risk would be consistent with market prices at the measurement date, which will include provision for financial risk. Possible approaches include the use of replicating portfolios or stochastic modelling with risk-neutral parameters. Alternatively, provisions for financial risk can be made by adjusting the discount rate as discussed in section 8.

7.3.1 Universal Life Contracts

Universal life contracts often include features that are similar to financial options and that vary with market conditions. Some examples include the following:

- Credited interest rates on policyholder account values are generally linked to the returns, minus a spread, of indices available to the policyholder as investment options.
- Minimum interest rate guarantees, the value of which vary according to current and projected interest rates.
- Performance and persistency bonuses that vary according to the past financial performance of the contract and/or the persistency of the policyholder (e.g., bonus that becomes effective after a certain duration, under certain conditions).

Current common practice is to project the universal life cash flows under the prescribed interest rate scenarios in current CIA standards and to establish a liability based on the most adverse scenario. The liability ascribed to these financial options is therefore unlikely to be consistent with market prices. Stochastic modelling with risk-neutral scenarios or replicating portfolio techniques may be needed.

Some best estimate policyholder behaviour assumptions may vary according to market parameters (e.g., lapse or future premium persistency could depend on projected market conditions or amount of funds available). IFRS 17 does not introduce any new requirements to vary policyholder behaviour assumptions with market conditions. However, if policyholder behaviour assumptions are linked to market conditions, the resulting cash flows under IFRS 17 will be different from current practice, as they would include provision for financial risk consistent with market prices.

7.3.2 Segregated Fund Guarantees

Segregated fund guarantees are similar to options on defined underlying items, and therefore need to be valued consistent with market prices. Stochastic modelling techniques currently used in segregated fund valuations will continue to be appropriate under IFRS 17, although the scenarios used to determine the probability-weighted cash flows would need to be market

consistent rather than real world. Unlike current Canadian practice, the IFRS 17 FCF would be the same regardless of whether or not the guarantees are hedged.

Comments similar to those for universal life (above) can apply to policyholder behaviour assumptions that vary according to market conditions.

7.3.3 Index-Linked Payments

Some annuity or disability insurance payments are indexed based on a defined, published index such as the Consumer Price Index (CPI), often subject to some floors and caps. Under current Canadian practice, the indexation is linked to the deterministic scenario being valued. Under IFRS 17, inflation might be considered a market variable and, if so, would require projections to be consistent with market prices.

Consider the following example of three different annuities, each with different payment indexation:

1. Flat 2% per year indexation.
2. Indexation of annuity payments based on 100% of the CPI movement.
3. Same as item 2 but with a floor of 0% and a cap of 5%.

In the first example, cash flows would simply be projected based on contractual indexation. Market prices are not considered because indexation does not depend on any market variable.

In the second example, indexation does depend on a market variable, and thus consistency with market prices is required by IFRS 17. Since the relationship with the market variable remains the same regardless of the actual CPI-index level, implied forward CPI could be used to reflect market information.

The third example is more complicated because of the presence of floors and/or caps. Risk-neutral stochastic modelling may be needed to estimate the liability consistent with market prices.

7.3.4 Expense Inflation

Under current practice, assumed expense inflation is often tied to interest rate scenarios, but need not be. Similarly, IFRS 17 recognizes that assumptions about inflation are sometimes assumptions related to financial risk (e.g., if based on an index of prices (e.g., CPI) or interest rates) and sometimes not assumptions related to financial risk (IFRS 17.B128).

In situations where assumptions about inflation are related to financial risk, consistency with market prices would be required by IFRS 17. Similar to index-linked payments where the relationship between the cash flow and the market variable remains unchanged regardless of the market variable's level, market prices can be reflected by using future implied inflation rates.

7.3.5 Participating Insurance

Projected policyholder dividends under participating contracts are linked to the projected market environment and reflect the ability to pass experience to policyholders. Conceptually, this is the same requirement as in current CIA standards. Many actuaries approximate this by

assuming that current economic conditions persist and the current dividend scale is maintained, with separate testing to ensure that the policyholder dividend scales contain sufficient room to absorb adverse movements in market conditions.

IFRS 17 introduces one significant difference to current Canadian practice, which is that the cost of financial guarantees is included in the present value of future cash flows, and not in the risk adjustment for non-financial risk. Currently, provisions for economic risk would be included as a component of PfAD. This will need to change.

7.4 Deferrable Acquisition Expenses

Under IFRS 17, acquisition cash flows need to be included in the present value of future cash flows in order to calculate the CSM at initial recognition. Acquisition cash flows are defined as "cash flows arising from the costs of selling, underwriting and starting a group of insurance contracts that are directly attributable to the portfolio of insurance contracts to which the group belongs". Only expenses that are directly attributable to a portfolio of contracts, such as commissions and some direct expenses, are included in the estimates of future cash flows. Other acquisition expenses are recognized as incurred.

The inclusion of acquisition expenses in the present value of future cash flows reduces the CSM, and results in the deferral of those expenses to be recognized in profits later, through the release of the CSM over the coverage period of the group of contracts. This is similar to the DAC asset that is held on the balance sheet and amortized over time for some products under IFRS 4. However, the deferred expenses are part of the insurance contract liabilities through a reduction in the CSM, rather than held as a separate asset.

As the CSM is calculated at the group level, acquisition expenses attributed to a portfolio need to be allocated to the groups within that portfolio.

The portion of expenses that is deemed "directly attributable" to the portfolio will affect the CSM and the loss taken at initial recognition of contracts. Higher attributable acquisition expenses reduce the CSM and increase the likelihood of a group being onerous at initial recognition.

Directly attributable expenses also affect presentation (insurance revenue and insurance service expenses) per IFRS 17.B125.

8. Discounting

8.1 Comparison to Current Practice

Under current CIA standards, the approach to discounting is discussed in subsection 2240 for P&C insurance and subsection 2330 for life and health insurance.

Under IFRS 17, the relevant paragraphs on discount rates are 36, 56 (for the PAA) and B72–B85. IFRS 17 does not differentiate between P&C and life and health in setting discount rates.

Under IFRS 17, discount rates are set for cash flows that do not vary based on the returns on any underlying items. Adjustments are made to reflect the impact of financial risk that is not otherwise included in estimates of cash flows (IFRS 17.36) and to reflect variability of cash flows not otherwise reflected (IFRS 17.B74).

This section expands on the differences between current practice and IFRS 17, beginning with a summary of current practice.

8.1.1 Current Practice: P&C

Current CIA standards require the valuation of insurance contract liabilities to consider the time value of money and to include a PfAD to account for the uncertainty around the selected discount rate(s), claims development patterns, and reinsurance collectability.

The discount rate(s) represents the expected investment return (portfolio yield) on the assets chosen to support the policy liabilities, and will depend on the asset characteristics including the following:

- Assets owned at the calculation date;
- The allocation of those assets and related investment income among lines of business;
- The method of valuing assets and reporting investment income;
- Yields on assets acquired after the calculation date;
- Capital gains and losses on assets sold after the calculation date;
- Investment expenses; and
- Asset risks including credit-related events, default, impairment, or restructuring of obligations by the issuer of the invested assets at the calculation date.

Although discount rates may vary from one claim grouping to the next, from one future period to the next, or from one underlying accident or underwriting period to the next, it is common to select an aggregate portfolio of assets to generate a single discount rate for all years and product lines. Additionally, it is common practice to select a single discount rate to be applied to both net premium liabilities and net claim liabilities, but there is no requirement to do so.

The ceded policy liabilities are shown as recoverable amounts (assets) on the entity's balance sheet, and as such they are not supported by invested assets. The discount rate used to determine the present value of the ceded policy liabilities is generally selected from the following or a combination thereof:

- The discount rate selected for the present value of the net policy liabilities;
- A risk-free rate; and
- The discount rate used by the assuming entity.

The actuary would add an explicit PfAD for the uncertainty around the selection of the discount rate(s) including consideration for unknown asset risk (including credit/default risk and liquidity risk), mismatch risk between payment of claims and availability of liquid assets, and uncertainty in estimating the payment pattern of future claims.

8.1.2 Current Practice: Life and Health

Current CIA standards require insurance contract liabilities to be valued using the Canadian Asset Liability Method (CALM). Under CALM, there is no direct discounting of liabilities. Instead,

CALM sets the value of the insurance contract liabilities equal to the current statement value of supporting assets required to satisfy the obligations, taking into account reinvestment/ disinvestment.

The data required to calculate the CALM value of the insurance contract liability include the following:

- Liability cash flows;
- Cash flows for the invested assets that support the insurance contract liability;
- A risk-free (government) yield curve as of the valuation date;
- The projected level of credit spreads, asset deterioration and investment expenses by asset type;
- Investment return for non-fixed income investments; and
- Reinvestment/disinvestment assumptions:
    - The entity's investment strategy (i.e., assumptions around how the entity will reinvest cash at maturities and disinvest assets as required over the life of the insurance contract liabilities).
    - CIA prescribed interest rate scenarios (for example, the base scenario for interest rates includes the implied forward interest rates for the first 20 years and grades to a prescribed ultimate reinvestment rate (URR) at year 60 and beyond. Between year 20 and year 60, there is a prescribed methodology for grading between the 20-year observed point and the prescribed URR.)

While CALM does not result in explicit discount rates, it is common practice to solve for an equivalent discount rate that when applied to the insurance contract liability cash flows will give the same liability. This may be done either by solving for a level discount rate, or more commonly, by solving for a vector of yearly rates that can be interpreted as the expected annual portfolio return on the assets supporting the insurance contract liability. This would not be the same discount rate that would result from the application of IFRS 17.

8.2 Cash Flows That Do Not Vary with Returns on Underlying Items

Under IFRS 17, discount rates for cash flows that are fixed (i.e., that do not vary with returns on underlying items) are based on a liquidity-adjusted risk-free discount rate curve. This discount rate curve may be developed using either a bottom-up approach or a top-down approach.

Under either approach, two key differences from current practice are that the discount rates do not depend on the assets used to support the liabilities (e.g., investment expenses are ignored) and there are no reinvestment/disinvestment assumptions. The discount rate curve is set to reflect the characteristics of the liability cash flows (i.e., liquidity[4], currency, timing) only.

[4] The question of how to treat liquidity characteristics that change over time is under discussion.

8.2.1 Bottom-up Approach

Under the bottom-up approach, a risk-free discount curve is adjusted by adding an illiquidity premium to reflect the characteristics of the insurance contract liabilities. This approach requires the following judgments/estimates:

- Should the risk-free discount curve be based on government bond rates or swap rates?
- What is the longest duration risk-free asset for which there is a reliable yield (i.e., price from deep, liquid, and transparent markets)?
- How would risk-free rates be estimated beyond the observable period (i.e., ultimate rate, extrapolation technique, etc.)?
- How would the illiquidity premium be estimated?

The above has two similarities to current practice for life and health insurance. (1) a current risk-free curve is used; and (2) there is a need to extend the yield curve beyond the observable period.

For cash flows denominated in Canadian dollars, the risk-free curve under CALM uses the first 20 years of the current risk-free curve in the Canadian market (which is usually a government bond curve). This same approach could be used for IFRS 17 if 20 years is considered the longest duration for which there is a reliable yield.

The CALM method for extending the risk-free yield curve beyond the first 20 years prescribes a URR and a method for interpolating between the 20-year term and the URR. This approach might be used as a reference point for how to extend the risk-free curve beyond the observable period for IFRS 17.

There is no existing requirement under current CIA standards to identify an explicit illiquidity premium in the discount rates. An illiquidity premium is implicitly included; however, it would reflect the liquidity characteristics of the assets supporting the liabilities rather than the liquidity characteristics of the liabilities. Nevertheless, this might provide a way to estimate the illiquidity premium for the IFRS 17 discount rates.

Note that the liquidity characteristics of reinsurance contracts held would be assessed separately from the liquidity characteristics of the underlying direct contracts.

8.2.2 Top-down Approach

Under the top-down approach, a reference portfolio of assets is selected with characteristics that are similar to those of the insurance contract liability. For example, the current spot rate implied by a 20-year Canadian corporate bond might be selected as a reference for a 20-year Canadian liability cash flow. The current yields on the reference assets are then adjusted to remove any characteristics of the asset(s) that are not relevant to the liability, the primary examples being credit risk and market risk.

This approach requires the following judgements/estimates:

- What is the longest duration of reference assets for which there are reliable yields (i.e., prices from deep, liquid and transparent markets)?

- How would rates be estimated beyond the observable period?
- How would the reference portfolio be selected?
- How would the yield on reference portfolios be adjusted for characteristics that are not relevant to the insurance contract liability?

For the reference portfolio, the entity might view its current asset portfolio or target asset mix as having similar currency and liquidity characteristics to those of the liabilities and conclude that this provides an appropriate reference portfolio. If the entity were to take this approach, a partial link would be created between the entity's own assets and the liability discount rate. However, there is no requirement to choose the reference portfolio from assets held.

The yield on the reference portfolio would be adjusted to remove the portion of the yield related to credit risk on the assets. One possible approach would be to use the asset default assumptions (with MfAD) that are currently used for valuation, with possible adjustments to be consistent with current market prices at the valuation date (e.g., if default assumptions are based on long-term averages). Another possible approach would be to use the assumptions used to set impairment provisions under IFRS 9, increased to include provision for uncertainty and adjustments if needed to be consistent with current market prices.

The yield on the reference portfolio would also be adjusted to remove any market risk premium. In practice, this means that non-fixed income assets would be unlikely to be included in the reference portfolio.

The yield on the reference portfolio might also be adjusted to account for differences in liquidity characteristics between the reference portfolio and the insurance contract liabilities. However, IFRS 17.B81 indicates that such adjustment is not required if the reference portfolio reasonably reflects the liquidity characteristics of the liabilities.

8.3 Reflecting Financial Risk

According to IFRS 17.36, discount rates are used to ". . . adjust the estimates of future cash flows to reflect the time value of money and the financial risks related to those cash flows, to the extent that the financial risks . . . are not included in the estimates of cash flows".

This means that the impact of financial risks on cash flows can be incorporated directly in the estimates of future cash flows or through the discount rate, or some combination thereof. In any case, the approach to reflecting financial risk would be as consistent as possible with observable market prices at the valuation date (IFRS 17.B44). In particular, unlike current practice, there is no provision for reinvestment/disinvestment risk in the IFRS 17 valuation.

IFRS 17.B46 describes the *replicating portfolio* technique, where the value of the liability is set equal to the fair value of an asset portfolio whose cash flows exactly match (in all scenarios) the liability cash flows. This technique is similar to the application of CALM (though limited to observable market prices) and can be applied to a portion of the liability cash flows. Paragraph B47 further says that though the replicating portfolio technique is not required, if a replicating portfolio exists for some of the cash flows, the technique chosen would be unlikely to lead to a materially different measurement.

It is useful to consider two different ways in which cash flows are affected by financial risk:

- Cash flows can vary based on returns on underlying items (usually assets). By this we mean the asset returns that are "passed-through" to policyholders in products such as segregated funds, participating insurance, and some universal life contracts. Some of these contracts would meet the definition of insurance contracts with direct participation features (B101) and some would not.
- Cash flows can vary with assumptions related to financial risk, such as expense cash flows varying with inflation. Other examples are lapse rates that vary with future interest rates and minimum guaranteed credited rates.

8.3.1 Cash Flows That Vary with Returns on Underlying Items

IFRS 17.B74(b) says: "Cash flows that vary based on the returns on any financial underlying items shall be (i) discounted using rates that reflect that variability; or (ii) adjusted for the effect of that variability and discounted at a rate that reflects the adjustment made." IFRS 17.B75 continues: "The variability is a relevant factor regardless of whether it arises because of contractual terms or because the entity exercises discretion, and regardless of whether the entity holds the underlying items", which clarifies that IFRS 17.B74(b) is not limited to contracts with direct participation features but applies to all products where returns on underlying items are passed-through to policyholders.

For the portion of cash flows where asset returns are passed-through to policyholders, the replicating portfolio technique would suggest that the discount rate be chosen such that the value of those liability cash flows equals the fair value of the underlying assets. This is similar to a CALM valuation that starts with an account value or segregated fund or a ring-fenced participating block of assets, and then adds the other portions of the liability. For contracts with direct participation features, the entity's share of the underlying items (IFRS 17.B104(b)(i)) would also be measured this way.

IFRS 17.B77 clarifies that there is no requirement to split the estimated cash flows into those that vary based on the returns on underlying items and those that do not; however, it would often be straightforward to split them when starting from the current valuation approach.

8.3.2 Cash Flows that Vary with Assumptions Related to Financial Risk

Cash flows that vary with assumptions related to financial risk can be handled through the discount rate or through the cash flows. However, in either case the approach would be as consistent as possible with observable market prices, and IFRS 17 suggests stochastic modelling techniques and risk-neutral measurement techniques for achieving that objective (IFRS 17.B48,B77). Particular mention is made of the need to recognize the cost of options and guarantees, even when those guarantees are out-of-the-money (IFRS 17.B48, B76).

For financial risk that is fully hedged, the current valuation would include the cost of hedging the risk, which would be a reasonable basis for the IFRS 17 valuation provided the current provision is consistent with current market prices.

For financial risk that is not fully hedged, the current valuation would typically include provisions based on projected "real-world" scenarios of financial risk variables. These

approaches would generally not comply with the IFRS 17 requirement to be consistent with observable market prices. The IFRS 17 provision would be the same regardless of whether the risk is hedged or not.

9. Risk Adjustment for Non-financial Risk

IFRS 17 requires the entity to adjust the present value of future cash flows to reflect "the compensation that the entity requires for bearing the uncertainty about the amount and timing of the cash flows that arises from non-financial risk" (IFRS 17.37).

The corresponding concept in the current CIA Standards of Practice is the PfAD, which takes account of the effect of uncertainty of the assumptions and data in determining the liability.

While the concepts are similar, there are important differences. One difference is that the IFRS 17 risk adjustment for non-financial risk only includes provision for non-financial risk, while PfADs cover uncertainty in both economic and non-economic assumptions. Under IFRS 17, provisions for financial risk (i.e., cash flows that vary with assumptions related to financial risk and liability timing, currency and liquidity) are included in the present value of future cash flows, either by adjusting cash flows or adjusting the discount rate. However, there are no provisions for financial risk related to the assets supporting liabilities, such as investment expenses and reinvestment (asset-liability mismatch) risk.

Another difference is that the IFRS 17 risk adjustment for non-financial risk depends on the entity's own compensation requirements for taking risk, rather than exclusively on the uncertainty of the estimated future cash flows. This could result in entities setting different risk adjustments for non-financial risk for similar groups of insurance contracts. Therefore, to facilitate comparison among entities, IFRS 17 requires entities to disclose the confidence level to which the risk adjustment for non-financial risk corresponds, which is an entirely new requirement.

The entity can apply different methods to determine the risk adjustment for non-financial risk, such as the "cost of capital" method or the "confidence level" method, or any other method that satisfies the criteria laid out in IFRS 17.B91. Information on various methods of setting risk adjustments can be found in the Risk Monograph published by the IAA, and section 6 (Risk Adjustments for Non-Financial Risk) of IAN 100.

The table below compares the requirements for establishing PfADs and risk adjustments for non-financial risk:

	IFRS 17	Current CIA Standards	What's changed?
Measurement Objective	***Compensation*** required by ***entity*** to bear uncertainty.	Amount required to provide for the ***effect of uncertainty.***	Focus on **compensation required**, not just the effect of uncertainty.
Scope	Non-financial risk only.	Financial and non-financial risks.	No asset related MfADs, such as asset default, investment expenses or reinvestment risk (C3).
Method	Various, at entity discretion.	Assumptions that are more conservative than best estimate (often MfADs).	For non-economic assumptions, current approach can continue to be used, with adjustment if required to reflect entity-specific compensation requirements. Other methods are also permissible.
Diversification Benefit	Reflected, based on diversification that the entity considers when setting compensation requirements.	Reflected due to requirement that assumptions/liabilities be appropriate in aggregate. In practice, often given no explicit consideration or considered only within a line of business.	Diversification between financial risks and non-financial risks ignored. Entity's view of diversification may be different than diversification reflected in PfADs.

9.1 Reflecting Uncertainty in the Risk Adjustment for Non-financial Risk

IFRS 17 does not specify the method that an entity uses to determine the risk adjustment for non-financial risk, but outlines the characteristics of an appropriate risk adjustment in IFRS 17.B91. These characteristics are similar to those described in current CIA Standards of Practice and though the criteria do not match exactly, it is clear that the same basic principles apply. The main difference is that IFRS 17 requires the entity's view of the cost of risk (i.e., compensation required for bearing uncertainty) to be taken into account in setting the risk adjustment for non-financial risk. This is described in IFRS 17.B87 as the compensation required to make the entity indifferent between fulfilling a liability that has a range of possible outcomes arising from non-financial risk, and fulfilling a liability that will generate fixed cash flows with the same expected present value. This could mean, for example:

- The additional amount (in excess of the present value of future cash flows) required by the entity to accept the liability, at a confidence level reflecting the entity's cost of risk (confidence level method); or

- The return expected by the owners of the entity on the capital that would be set aside to fulfil the liability (cost of capital method). The capital in this context would typically be based on solvency considerations, and therefore at a much higher confidence level than the risk adjustment. The expected return (cost of capital) would be applied to the projected capital requirements to determine the risk adjustment for non-financial risk.

In assessing the entity's view of the cost of risk, the actuary would take into consideration the entity's enterprise risk management framework.

9.2 Considerations for Using PfADs to Determine Risk Adjustment for Non-financial Risk

As noted above, the underlying principles for determining the risk adjustment for non-financial risk are similar to those used to set CIA PfADs. Therefore, the current PfADs for non-economic assumptions may be a good starting point for setting the risk adjustment for non-financial risk. The following considerations would be taken into account:

- Is the current level of PfAD consistent with the compensation the entity requires for bearing uncertainty?
- Are the diversification benefits included in current PfADs consistent with those that would be reflected in IFRS 17?
- How would the confidence level (to satisfy disclosure requirement of IFRS 17.B92) inherent in the current PfADs be determined?
- IFRS 17 requires reinsurance contracts held to be measured as separate contracts. How would the PfAD appropriate to the net liability be split between the direct and ceded contracts?
- Are any adjustments needed for pass-through features?

9.2.1 Current Level of PfAD Versus the Compensation the Entity Requires

Current CIA PfADs are intended to provide for a similar level of uncertainty (sufficient without being excessive) across different risks and products for all entities. In selecting an MfAD within the recommended range, a lower/higher MfAD provides for less/more uncertainty but not for a lower/higher level of confidence or entity-specific compensation required for bearing the uncertainty. Therefore, if using CIA PfADs to determine the IFRS 17 risk adjustment for non-financial risk, adjustment would be needed if the entity-specific view of the compensation required to bear uncertainty is different from that of typical Canadian entities.

For example, it is possible that the entity would be satisfied with a lower level of compensation than implied by the current level of PfAD. In other words, the entity may be constrained to hold the current level of PfAD because of current CIA standards, even though they would otherwise accept a lesser provision. In a situation like this, the risk adjustment for non-financial risk might be lower than the PfAD for non-economic assumptions.

9.2.2 Diversification Benefits

IFRS 17.B88 requires the risk adjustment for non-financial risk to reflect the degree of diversification benefit the entity includes when determining the compensation it requires for

bearing non-financial risk. Current CIA standards (paragraph 2120.07) also suggest consideration of diversification benefits, though in practice this is often done implicitly or only within product lines, and would include consideration of both financial and non-financial risk.

Therefore, if using CIA PfADs to determine the IFRS 17 risk adjustment for non-financial risk, adjustment might be needed to achieve the objectives of IFRS 17.

9.2.3 Confidence Level Disclosure

IFRS 17.B92 requires disclosure of the confidence level of the risk adjustment for non-financial risk. The purpose of this disclosure is to allow users to compare risk adjustments across entities by distinguishing differences arising from different levels of uncertainty from differences arising from different entity-specific views of the compensation required to bear uncertainty.

As discussed in section 9.2.1, current CIA PfADs are intended to provide for a similar level of uncertainty and hence a similar confidence level. Current CIA standards do not specify this confidence level and in practice there will be variation in confidence levels across entities (especially in the treatment of diversification benefits).

However, assumptions used for Dynamic Capital Adequacy Testing and LICAT, which are intended to cover confidence levels of approximately 95–99 and 99.5 (based on normal distributions) respectively, may provide a reference point.

Given the above, it may be reasonable to assume that the confidence level inherent in current CIA PfADs for non-economic risk is approximately 85–90. In the absence of more reliable information (which might be available from, e.g., the entity's Own Risk and Solvency Assessment), this range can be used to help estimate the initial confidence level disclosure on transition to IFRS 17.

Note that the purpose of the confidence level disclosure is to help users understand and compare financial statements. In this context, it is important for the reported confidence level to be comparable among entities. This is the sole purpose of providing the benchmark above.

9.2.4 Reinsurance Contracts Held

IFRS 17 requires reinsurance contracts held to be measured separately from the underlying direct contract(s) and, in particular, the risk adjustment for non-financial risk is determined separately. IFRS 17.64 clarifies that the risk adjustment for non-financial risk on a reinsurance contract held represents the amount of risk transferred from the entity to the reinsurer. Therefore, unlike other contracts, the risk adjustment for non-financial risk on a reinsurance contract held reduces the liability (or increases the asset).

Under current CIA requirements, the PfAD for non-economic assumptions is set at a level appropriate for the liability net of reinsurance, and there is no requirement to split it between the direct contract and the reinsurance ceded contract. However, the information to split it might be readily available; for example, in proportion to the face amount.

Note that a proportionate split is appropriate only if, as is typically the case, the entity takes into account the existence of reinsurance in establishing the compensation required for bearing uncertainty.

9.2.5 Effect of Pass-Through Features

Some products have features that share risk with policyholders. Under current CIA standards, entities take these features into account in assessing the PfAD required. For example, an entity could establish an MfAD at the low end of the CIA range (or even below the low end in the case of participating life insurance business), depending on the extent of pass-through features. This concept also exists in IFRS 17, to the extent that the "compensation an entity requires" takes account of the existence of the pass-through features. Therefore, the current CIA approach would be consistent with IFRS 17 unless the entity ignores (some or all) pass-through features in determining the compensation it requires for bearing uncertainty.

Appendix A: Contract Classification for Canadian Life and Health Products

Product	Analysis
Term Life/Whole Life/ Par/Endowment	• Payment on insured event (death) is fixed but timing is uncertain, so would be classified as insurance contracts.
Payout Annuities	• All payout life contingent annuities would be classified as insurance contracts, including those with term certain periods. On transition to IFRS 17, if the annuitant is deceased and payments are continuing under the term certain period, the annuity remains an insurance contract. • Guaranteed-only (i.e., term certain) annuity contracts from issue would be classified as investment contracts. Also, if a block of annuities is acquired from another entity, contracts where the annuitant is deceased and payments are continuing under the term certain period would be classified as investment contracts.
Deferred Annuities	• Deferred annuities with minimum guaranteed annuity purchase options would be classified as insurance contracts unless the guarantee has no commercial substance. • Deferred annuities without minimum guaranteed annuity purchase options would normally be classified as investment contracts. • For deferred annuities where the only guarantee is to pay book value (or the higher of book value and market value) on death, the guarantee may be considered a waiver of surrender charges on death, which is not considered insurance risk under IFRS 17 (refer to IFRS 17 B.18 to B.23 for further discussion). Therefore, such contracts may be classified as investment contracts.
Universal Life and Variable Universal Life	• Contracts usually contain significant insurance (mortality) risk, therefore would be classified as insurance contracts. • No specific threshold is provided on what constitutes "significant", though examples in drafts of IFRS 17 suggest that a death benefit of 101% of the account value does not constitute "significant" insurance risk.
Segregated Funds without Guarantees	• Generally these are not insurance contracts as there is no transfer of insurance risk, and they would be classified as investment contracts.

Product	Analysis
Segregated Funds with Guarantees	• Generally insurance contracts, but analysis would be done on the type of benefit to assess whether the guarantee is purely a financial risk option or a waiver of surrender charge, neither of which is considered insurance risk. • Guaranteed minimum death benefits (GMDB) – Minimum payout in the event of death. Death is the insured event, and the payment on death could be more than the policyholder fund. • Guaranteed minimum income benefits (GMIB) – This is similar to an annuity contract where survivorship is the insured event, and payment on survival could result in a loss to the entity. • Guaranteed minimum accumulation benefits (GMAB) – The benefit is paid on maturity similar to an endowment product. The amount paid is uncertain and the entity can pay more than the fund in certain scenarios. • Payment on the insured event of an amount higher than the policyholder fund is not in itself sufficient to conclude the contract transfers significant insurance risk (for the same reason that waiver of surrender charges on death does not constitute insurance risk).
Group Insurance Contracts	• Group life, accidental death, health and disability insurance contracts would be classified as insurance contracts unless refund or hold harmless agreements mean there is no significant insurance risk transferred. • ASO (administrative services only contracts) with risk pooling would be classified as insurance contracts. • ASO contracts without pooling (e.g. employee benefit programs, including life, accidental death, health and disability benefits) would be classified as service contracts.
Employee Benefit Plans/Defined Benefit Pensions	• Out of scope of IFRS 17 (IAS 19).

Product	Analysis
Reinsurance Contracts	• Classification of reinsurance contracts issued is the same as insurance contracts issued (direct). • Reinsurance contracts held are classified separately from the underlying direct contract(s). • The transfer of non-insurance risk (e.g., lapse or expense risk) from an entity to a reinsurer exposes the assuming entity to insurance risk. • If a reinsurance contract does not expose the entity to the possibility of a significant loss on a present value basis, that contract is nevertheless deemed to transfer significant insurance risk if it transfers substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts.
Credit Insurance Contracts	• Credit life and disability insurance may be either individual policies or certificates of group insurance contracts. Such contracts would be classified as described above. • Credit related guarantees, other than for death or disablement, are not considered insurance contracts unless the issuer has previously asserted explicitly that it regards the contract as an insurance contract and has irrevocably elected to account for such contracts as insurance contracts. Otherwise, such contracts would be classified as investment contracts.
Disability (Individual and Group)	• Would be classified as insurance contracts. • Liabilities for claims in settlement are liabilities for incurred claims (LIC), and remain LIC on transition to IFRS 17. However, if a block of claims in settlement is acquired from another entity, the nature of the insurance risk is such that the liability would become a liability for remaining coverage (IFRS 17.B5).
Critical Illness	• Would be classified as insurance contracts.

Appendix B: Examples of Investment Components in Canadian Life and Health Contracts

Contract/Feature	Distinct?	Accounting Treatment
Traditional Individual Life and Health Contracts		
Cash surrender value (CSV)	No. The CSV is highly interrelated with the insurance component as per IFRS 17.B32.	Include in fulfilment cash flows (FCF). Exclude from insurance revenue and insurance service expense.
Endowment benefit	No. The endowment benefit is highly interrelated with the insurance component as per IFRS 17.B32.	Include in FCF. Exclude from insurance revenue and insurance service expense.
Policy loans	No. IFRS 17.BC114 indicates that policy loans are non-distinct investment components.	Include in FCF. Exclude from insurance revenue and insurance service expense. Report balance with insurance contract liabilities (negative) rather than as a separate asset.
Return of premium (ROP) on surrender or expiry	No. The ROP is highly interrelated with the insurance component as per IFRS 17.B32.	Include in FCF. Exclude from insurance revenue and insurance service expense.
Amounts on deposit (AoD), including dividends on deposit	Maybe. The conditions in IFRS 17.B31(b) (contracts with equivalent terms could be sold separately) and IFRS 17.B32(a) (able to measure the component separately) would sometimes be met, but the condition in paragraph IFRS 17.B32(b) (lapse or maturity of the base policy causes lapse or maturity of AoD) would often cause the AoD to be non-distinct.	If distinct, it would be separated from the insurance contract, measured under IFRS 9, and the liability would be included with other investment contract liabilities in the financial statements. If non-distinct, IFRS 17 applies and the liability would be included with insurance contract liabilities. Exclude from insurance revenue and insurance service expense.

Traditional Individual Life and Health Contracts		
Policyholder dividends (annual or terminal)	No. Policyholder dividends are highly interrelated with the insurance component as per IFRS 17.B32.	Include in FCF and treat as discretionary cash flows under IFRS 17.B98–B100. Report insurance service expense and insurance finance expense with change in related policyholder dividend cash flows, so the amount reported in income is net of amounts passed-through to policyholders[5].
Prepaid premium account	Maybe. See AoD above.	If distinct, it would be separated from the insurance contract, measured under IFRS 9, and the liability would be included with other investment contract liabilities in the financial statements. If non-distinct, IFRS 17 applies and the liability would be included with insurance contract liabilities. Exclude from insurance revenue and insurance service expense.

[5] Under discussion

Contract/Feature	Distinct?	Accounting Treatment
Universal Life Contracts		
Cash surrender value (CSV), usually equal to the account value less surrender charges and/or market value adjustments	No. The CSV is highly interrelated with the insurance component as per IFRS 17.B32.	Include in FCF. Exclude from insurance revenue and insurance service expense.
Side account (to hold amounts that do not fit into the policy due to the exempt test rules)	Maybe. See AoD above.	If distinct, it would be separated from the insurance contract, measured under IFRS 9, and the liability would be included with other investment contract liabilities in the financial statements. If non-distinct, IFRS 17 applies and the liability would be included with insurance contract liabilities. Exclude from insurance revenue and insurance service expense.
Savings and Retirement Contracts		
Account value less deferred sales charges or market value adjustments payable on surrender or maturity	No. The insurance component cannot be measured without considering the investment component (IFRS 17.B32(a)).	Include in FCF. Exclude from insurance revenue and insurance service expense.
Annuity payments during the term certain period on life-contingent annuities	No. The policyholder is unable to benefit from the insurance component without the guarantee (IFRS 17.B32(b))[6].	Include in FCF. Exclude from insurance revenue and insurance service expense.
Segregated funds (GMWB, GMDB, GMAB, GMMB, GMIB)	No. The segregated fund value is highly interrelated with the insurance component as per IFRS 17.B32.	Separate presentation is under discussion.

[6] Under discussion

Group Insurance Contracts and Administrative Services Only (ASOs)		
Experience rating	No. Accruals of experience rating amounts are interrelated to the premiums, claims and expenses experience of the group insurance contract as per IFRS 17.B32.	As for policyholder dividends above. If there is no insurance risk (e.g., hold harmless agreement), the contract would be outside the scope of IFRS 17.
Claim fluctuation reserves, premium stabilization reserves	Maybe. See AoD above.	If distinct, it would be separated from the insurance contract, measured under IFRS 9, and the liability would be included with other investment contract liabilities in the financial statements. If non-distinct, IFRS 17 applies and the liability would be included with insurance contract liabilities. Exclude from insurance revenue and insurance service expense.

Appendix C: Examples of Service Components in Canadian Life and Health Products

Type of Contract/Feature	Accounting Treatment
Individual Insurance Contracts – Life, Health, Annuity and Property and Casualty	
Policy and contract administration, and claims adjudication and administration	If distinct, i.e. readily available to the contract holder through other means (B34), cash flows would be separated, measured under IFRS 15, and included with other service contracts in the financial statements. If not distinct, the cash flows would not be separated.
Group Insurance contracts and ASO contracts	
ASO – pure	IFRS 15 applies to pure ASO, since entity has no insurance risk and provides administrative, claims, and processing services, while the group contract holder assumes all the insurance risk, and pays for all services and claims. Absent any insurance features, IFRS 9 applies to any account balances.
ASO – with insurance	AoD arising from annual accounting of the ASO might be a distinct investment component. If so, it would be separated, measured under IFRS 9 and included with other investment contracts in the financial statements. The service component of the contract might be distinct under IFRS 17.34. If so, it would be separated, measured under IFRS 15, and included with other service contracts in the financial statements. The remaining components of the contract would not be separated.
Policy and contract administration, and claims adjudication, processing and administration	If distinct, i.e. readily available to the contract holder through other means (B34), cash flows would be separated, measured under IFRS 15, and included with other service contracts in the financial statements. If not distinct, the cash flows would not be separated. Also see IFRS 17 illustrative examples IE51-IE55.

Appendix D: Situations where PAA is Unlikely to be a Reasonable Approximation to GMA

Scenario	Reasoning
Patterns of the expected incurred claim costs and the release of the risk adjustment are significantly different during the coverage period.	The PAA approach reduces the LRC in line with the pattern for incurred claim costs only.
The pattern of expected incurred claim costs is strongly uneven and the CSM is significant under the GMA and the coverage period is more than one year.	The CSM is released in accordance with the insurance service provided which is based on coverage units for the duration of coverage. If the coverage provided by a contract is even over the coverage period then the CSM would be expected to be amortized evenly. For the PAA, a strongly uneven pattern of expected incurred claims would result in an uneven pattern of premium allocated to each period. The size of the CSM would then determine the significance of this difference.
The longer the expected payout pattern is for the coverage and/or the higher the interest rate environment.	Significant variability in the cash flows may occur during the coverage period if the time value of money is significant in the GMA. For long claim payment periods, even a small change in interest rates could significantly change the value of the LRC. In a high interest rate environment, interest rates tend to be more volatile, and discounting can make up a significant portion of the LRC even for shorter claim payment periods.
In a high interest rate environment and there is no significant financing component and the premium is due within a year of providing the relevant coverage.	In this situation an entity is not required under the PAA to reflect the time value of money in the LRC but would be required to do so under the GMA.
There is a significant investment, service, or other non-insurance component to the contract, or there is a significant profit-sharing component.	These are complications in which PAA might be less likely to provide a reasonable approximation to the GMA.
The cost of any embedded options or derivatives is significant.	See IFRS 17.54(a).

Scenario	**Reasoning**
Coverage is deferred.	While the PAA would likely require the LRC to accrete interest, the longer the deferral period the greater the mismatch is likely to occur between the GMA and the PAA. The GMA would continue to update expectations of future cash flows while the PAA would only adjust for changes in the timing for incurred claims in the coverage period per IFRS 17.B127.
Longer duration contracts generally.	For many reasons already highlighted, the longer the coverage period, the greater the variability in the fulfillment cash flows under the GMA.
Cancellation of policies within the coverage period are significant or lapses through non-payment of future premiums are an issue, when premium has been paid upfront.	Under the PAA, premium is allocated based on the passage of time or incurred claims if the expected pattern of release from risk is significantly different from the passage of time; there is no reflection of cancellations or return of premium. The GMA on the other hand, reflects expected return of premiums and expected lapses and changes in them during the coverage period for the LRC.

Appendix E: Measurement Approaches for Typical Canadian Products

Product	GMA	Eligible for PAA?	VFA required?
Group insurance with coverage period of one year or less	Yes	Yes	No
Group insurance with coverage period greater than one year	Yes	Maybe	No
Term life and whole life	Yes	No	No
Segregated funds	No	No	Yes
Universal life	Yes – most likely	No	Maybe
Participating life (open)	Yes – most likely	No	Maybe – is link to underlying items enforceable[7]?
Participating life (closed)	Maybe	No	Yes – most likely[8]
Critical illness, disability income, long-term care	Yes	No	No
P&C products with coverage period of one year or less	Yes	Yes	No
P&C products with uniform earning patterns with coverage period greater than one year	Yes	Maybe	No
P&C products with uneven earning patterns with coverage period greater than one year	Yes	Probably not	No

[7] Under discussion
[8] Under discussion

Educational Note

2019 Guidance to the Appointed Actuary for Property and Casualty Insurers

Committee on Property and Casualty Insurance Financial Reporting

October 2019

Document 219114

Ce document est disponible en français

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The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

MEMORANDUM

To: Members in the Property and Casualty Insurance Practice Area

From: Steven W. Easson, Chair
Standards and Guidance Council

Houston Cheng, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: October 11, 2019

Subject: **Educational Note – 2019 Guidance to the Appointed Actuary for Property and Casualty Insurers**

In accordance with the Canadian Institute of Actuaries' *Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents*, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Standards and Guidance Council on October 8, 2019.

The actuary should be familiar with relevant educational notes. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application of the Standards of Practice, so there should be no conflict between them. The actuary should note however that a practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

The topics covered herein are

1. Introduction *(unchanged)* 3
2. Guidance to Members on Specific Situations *(unchanged)* 3
3. Standards of Practice *(modified)* 3
4. Materiality *(modified)* 4
5. Use of Another Person's Work *(unchanged)* 4
6. Educational Notes and Other CIA Publications *(modified)* 5
7. International Financial Reporting Standards *(modified)* 6

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8. Regulatory Guidance *(modified)* 6
9. Current or Emerging Issues and Other Considerations *(modified)* 9
Appendix A 11
Appendix B 12

If you have any questions or comments regarding this educational note, please contact Houston Cheng at hhcheng@kpmg.ca.

SWE, HC

1. Introduction *(unchanged)*

The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to the Appointed Actuary (AA) for property and casualty (P&C) insurers. This note reviews relevant Standards of Practice and other educational notes and discusses current issues affecting the work of the AA. Links to all the CIA documents referenced in this educational note are provided in Appendix A.

2. Guidance to Members on Specific Situations *(unchanged)*

From time to time, CIA members seek advice or guidance from the PCFRC. The PCFRC strongly encourages such dialogue. CIA members are assured that it is proper and appropriate for them to consult with the chair or vice-chair of the PCFRC.

CIA members are reminded that responses provided by the PCFRC are intended to assist them in interpreting the Standards of Practice, educational notes, and Rules of Professional Conduct (Rules), and in assessing the appropriateness of certain techniques or assumptions. A response from the PCFRC does not constitute a formal opinion as to whether the work in question is in compliance with the Standards of Practice and Rules. Guidance provided by the PCFRC is not binding upon the member.

3. Standards of Practice *(modified)*

The Standards of Practice are subject to revision from time to time. At the time of writing this educational note, references to the Standards of Practice correspond to the version effective July 1, 2019. Note that there are changes to the Standards of Practice effective December 2019; however, these changes do not affect the P&C practice area. The Rules version referred to became effective September 1, 2016.

While all of the Rules and Standards of Practice are important, your attention is directed to the following that are particularly relevant for AAs:

- Subsection 1240 – Materiality;
- Section 1400 – The Work including 1460 Quality Assurance, which is a new section effective July 1, 2019;
- Section 1500 – Another Person's Work; including changes to 1530 Review or repeat of another actuary's work effective July 1, 2019;
- Section 1600 – Assumptions and Methods;
- Section 1700 – Reporting;
- Section 2100 – Insurance Contract Valuation: All Insurance;
- Section 2200 – Insurance Contract Valuation: Property and Casualty Insurance;
- Section 2400 – The Appointed Actuary; and
- Section 2500 – Dynamic Capital Adequacy Testing.

The revisions to sections 1400 and 1500 of the General Standards of Practice (Part 1000) that took effect July 1, 2019, address the areas of quality assurance, peer review, and work review, and are the result of the designated group (DG) established by the Actuarial Standards Board (ASB). The notice of intent issued in August 2017 specifically requested feedback in four areas: (i) the need to strengthen standards of practice related to peer review; (ii) the need for a peer reviewer to be independent from the actuary performing the work; (iii) differentiation among types of work subject to peer review; and (iv) detailed requirements such as qualifications of peer reviewer and reporting requirements.

Refinements were made to existing Subsection 1530, Review or repeat of another actuary's work, and a new Subsection 1460, Quality Assurance, was added. Paragraph 1460.01 notes that "this subsection 1460 applies to quality assurance processes that are at the instigation of the actuary responsible for the work. Such processes include quality control in the actuary's firm or employer as well as review by persons external to the actuary's firm or employer."

Paragraph 1460.03 specifies the circumstances of actuarial work that would influence the degree of quality assurance performed. Paragraphs 1460.05 and 1460.06 define peer review and set out the basis for determining that a peer reviewer would be considered qualified to perform the work.

Paragraph 1490.07 was also added to Subsection 1490, Documentation, which notes that "the actuary should document the quality assurance processes that were followed in performing the work".

4. Materiality *(modified)*

Materiality is addressed in Subsection 1240 of the Standards of Practice. The AA would communicate with the external auditor regarding materiality in accordance with the Joint Policy Statement concerning communications between auditors and actuaries involved in the preparation of financial statements (Subsection 1520).

The AA would consider the users of the report when selecting the level of materiality. For the Appointed Actuary Report (AAR), the end users are not limited to the users of the financial statements. The materiality threshold selected by the AA for the valuation of insurance contract liabilities usually would not be greater than the external auditor's selected materiality threshold. However, it may be substantially less when the actuary considers it appropriate to select a lower threshold. The materiality selected by the AA for the dynamic capital adequacy testing (DCAT) would usually be greater than the materiality selected for the valuation of insurance contract liabilities.

For further information on materiality, the AA is referred to the CIA *Materiality* report.

5. Use of Another Person's Work *(unchanged)*

Section 1500 of the Standards of Practice discusses considerations when using another person's work. Paragraph 1510.07 notes that "the actuary may use and take responsibility for another person's work, given confidence that such actions are justified…". However, as stated in paragraph 1510.12, "If the actuary uses but does not take responsibility for another person's work, the actuary would nevertheless examine the other person's work for evident

shortcomings and would either report the results of such examination or avoid use of the work."

A particularly relevant example for AAs is the use of industry benchmarks related to Ontario automobile reforms. Similarly, the use of industry benchmark trend factors is another example. When using benchmarks developed by a third party, the AA would consider the professional requirements set out in Section 1500.

6. Educational Notes and Other CIA Publications *(modified)*

To assist AAs in their year-end valuation or DCAT work, the following educational notes and documents are valuable sources of information:

- Starting this year, the Committee on Risk Management and Capital Requirements (CRMCR) has launched an annual educational note that covers updates relevant for capital and risk management purposes, including updates and guidance on the Minimum Capital Test (MCT), DCAT, and Own Risk and Solvency Assessment (ORSA). This educational note includes links to all the relevant capital educational notes and other useful references.

  Educational Note: *Guidance for the 2019 Reporting on Capital and Financial Condition Testing for Life and P&C Insurers* (August 2019);
- Second Revision of Educational Note: *Dynamic Capital Adequacy Testing* (November 2017);
- Educational Note: *Duration Considerations for P&C Insurers* (March 2017);
- Educational Note: *Use of Models* (January 2017);
- Second Revision – Educational Note: *Premium Liabilities* (July 2016);
- Educational Note: *Discounting and Cash Flow Considerations for P&C Insurers* (May 2016);
- Revised Educational Note: *Subsequent Events* (October 2015);
- Educational Note: *Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice* (June 2011);
- Research Paper: *Disclosure Requirements IFRS 4 – Insurance Contracts for P&C Insurers* (October 2010);
- Educational Note: *Margins for Adverse Deviations for Property and Casualty Insurance* (December 2009);
- Educational Note: *Accounting for Reinsurance Contracts under International Financial Reporting Standards* (December 2009);
- Educational Note: *Classification of Contracts under International Financial Reporting Standards* (June 2009);
- Report: *Materiality* (October 2007);
- *Report of the CIA Task Force on the Appropriate Treatment of Reinsurance* (October 2007);

- Educational Note: *Consideration of Future Income Taxes in the Valuation of Policy Liabilities* (July 2005); and
- Educational Note: *Valuation of Policy Liabilities P&C Insurance Considerations Regarding Claim Liabilities and Premium Liabilities* (June 2003).

7. International Financial Reporting Standards *(modified)*

There is no impact from IFRS 17 on the 2019 year-end AA valuation, however AA's should refer to the IFRS 17 blog on the CIA website (login required) for up-to-date summaries of CIA activities and links to relevant sources of information regarding IFRS 17. Of note is that the International Accounting Standards Board (IASB) is proposing targeted amendments to IFRS 17 to respond to concerns and challenges raised by stakeholders as IFRS 17 is being implemented.

Please refer to Appendix B for information about the development of standards of practice, guidance, and capital requirements under IFRS 17.

8. Regulatory Guidance *(modified)*

We remind AAs to refer to updated communications from provincial and/or federal insurance regulators regarding insurance contract liabilities valuation and DCAT reporting, and to the new educational note from the CRMCR covering relevant updates for capital and risk management purposes.

8.1. Office of the Superintendent of Financial Institutions (OSFI) Requirements

8.1.1. OSFI Annual Memorandum for Actuarial Reports on P&C Business

OSFI issues an annual memorandum for the AA. AAs would consult this memorandum for complete instructions from OSFI. Of note is that the unpaid claims and loss ratio analysis exhibit has been revised for 2019.

8.1.2. Capital Requirements

References in this section to OSFI's MCT for Canadian insurers are intended to encompass comparable requirements for Canadian branches of foreign insurers, i.e., the Branch Adequacy of Assets Test (BAAT).

The MCT Guideline currently in effect was issued by OSFI in November 2018 with an effective date of January 1, 2019.

The guideline:

- Introduces credit risk capital charges to right-of-use assets resulting from the implementation of IFRS 16;
- Adjusts net assets available for Canadian branches to admit the right-of-use asset for owner-occupied property leases resulting from the implementation of IFRS 16;
- Introduces counterparty credit risk capital charges on amounts receivable and recoverable from registered associated reinsurers;

- Recognizes accounts payable created under a funds-held reinsurance arrangement between Canadian insurance companies and unregistered associated insurers as acceptable collateral to reduce the margin required for cessions to unregistered reinsurers, subject to a condition;
- Updates the credit risk factors for securitized assets and transfers the updated risk factors from Guideline B-5 – Asset Securitization to the MCT guideline; and
- Implements other minor edits or clarifications.

Effective, January 1, 2020, the guideline:

- Increases the margin required for reinsurance ceded to unregistered reinsurers from 15 percent to 20 percent.
- Introduces a transition period for the increase in the margin required for reinsurance ceded to unregistered reinsurers from 15 per cent to 20 per cent.

8.1.3. Guideline A-4 Regulatory Capital and Internal Capital Targets

The current Guideline A-4 was updated in December 2017, effective January 1, 2018. The guideline sets out OSFI's expectations with respect to the setting of insurer-specific internal target capital ratios and how such targets relate to the assessment of capital adequacy within the context of OSFI's supervisory framework. The AA is usually involved with and understands the insurer's process and assumptions used to select the internal target capital ratio.

8.1.4. Guideline E-19 Own Risk and Solvency Assessment

The current guideline was updated in December 2017, effective January 1, 2018. The guideline sets out OSFI's expectations with respect to an insurer's own assessment of its risks, capital needs, and solvency position and for setting internal targets.

The AA is usually involved in the preparation of ORSA given the significant role the AA has in preparing key elements that are part of ORSA (e.g., the DCAT, stress testing in accordance with Guideline E-18, internal capital target setting per Guideline A-4, and the policy liabilities valuation report). The AA may also be involved in the qualitative aspects of ORSA (e.g., assisting in the determination of the risk appetite and risk tolerance of the insurer). On an annual basis (prior to December 31 each year), OSFI requires the board or chief agent to review and discuss the ORSA report. OSFI also requires the key metrics report form to be submitted at least annually and within 30 days of review by the board or sign-off by the chief agent.

8.1.5. Guideline E-15 Appointed Actuary: Legal Requirements, Qualifications, and Peer Review

A full peer review of the AAR and DCAT report is required every three years. In addition, OSFI expects the reviewer to undertake a limited scope annual review and to prepare and file a report annually.

8.1.6. Guideline B-9 Earthquake Exposure Sound Practices

OSFI requires insurers to file the Earthquake Exposure Data Form and instructions by May 31 of each year using the Regulatory Reporting System.

8.2. Requirements of the Autorité des marchés financiers (AMF)

Note: to access AMF documents, please copy and paste the links into your browser.

8.2.1. AMF Annual Guides for Actuarial Reports on P&C Business

The AMF issues specific guides to AAs of Québec-chartered insurers for both the valuation of insurance contract liabilities and DCAT. The AA would consult these guides for the complete requirements from the AMF.

The AMF guide regarding the mandatory insurance contract liabilities report is updated annually and addresses regulatory requirements and the report's expected content and prescribed layout. The AMF guide also mandates prescribed exhibits for reporting results of the AA's valuation of insurance contract liabilities. Prescribed exhibits include the unpaid claims and loss ratio analysis exhibits for which specific instructions are also available along with the guide. The unpaid claims and loss ratio analysis exhibits have ben revised for 2019.

The AMF also publishes a guide for the preparation of the report on the insurer's financial condition (DCAT report). This guide is updated annually, usually in November, and addresses the same general aspects as the guide on the valuation of insurance contract liabilities. When completing the DCAT report, AAs are advised to be aware of the latest developments in the calculation of the MCT ratio. The AMF requires the AA to annually disclose the insurer's internal capital target ratio, and the DCAT guide states that the AA would take care to detail the methodology and assumptions used in the determination of the internal capital target ratio.

8.2.2. Capital Requirements

In December 2018, the AMF published its revised MCT guideline, which came into effect on January 1, 2019. The changes were harmonized to a significant extent with the changes to OSFI's 2019 MCT guideline.

After the Insurers Act came into effect in June 2019, the AMF published two new MCT guidelines regarding the solvency requirements respectively of self-regulatory organizations and reciprocal unions authorised to carry on insurer activities. These new guidelines are for the most part very similar to the current 2019 MCT guideline for traditional insurers, but with necessary adaptations. Before year-end, the AMF plans to publish draft versions of the MCT 2020 guidelines for consultation. Changes should be limited to adaptations made necessary by the coming into force of the Insurers Act and minor edits or clarifications. The revised guidelines are expected to be effective on January 1, 2020.

AAs of Québec-chartered insurers would also be aware that AMF requires insurers to file the earthquake exposure data by April 15 of each year, using the AMF Earthquake Exposure Data Form and instructions and based on latest year-end exposure.

AAs would be expected to be familiar with any subsequent revision to the capital requirements and incorporate them where applicable.

8.2.3. Integrated Risk Management Guideline and Capital Management Guideline

In May 2015, the AMF published a revised version of its *Integrated Risk Management Guideline* to accompany the publication of its new *Capital Management Guideline*. The revision and the

addition of the new guideline were meant to update certain concepts and to give specific expectations regarding capital and risk management, particularly for elements such as the

- Notions of risk appetite and risk tolerance levels;
- Relations between the risk management framework, the solvency position, and the strategic objectives of the insurer and their disclosure to the board of directors and senior management; and
- ORSA related to capital management (governance, choice of capital instruments, planning of capital needs) and its impact on the insurer's risk profile.

The AMF expects AAs to be involved in the own risk and solvency mechanism, especially with regard to setting the internal capital target and stress testing as a complementary tool to DCAT.

The AMF also expects the application of the ORSA mechanism to be the subject of an official report to the board of directors at least once a year, or more often if the financial institution's risk profile changes significantly, and assesses the degree of compliance to these guidelines as part of its supervisory framework.

9. Current or Emerging Issues and Other Considerations *(modified)*

It is important for the AA to be aware of current or emerging issues that could affect valuation or DCAT work; several considerations are discussed below.

9.1. Product Reforms

The AA would consider the potential effect that product reforms could have on both the valuation of insurance contract liabilities and the DCAT. For example, the AA would consider changes to provincial auto products and the introduction of coverages such as flood and cyber risk when undertaking both valuation and DCAT work.

9.2. Recent Judicial, Legislative, and Political Events

Regular communication with claims professionals is essential to the work of the AA. These discussions would encompass the potential effect of recent court decisions, judicial events, legislative changes, and political events that may be relevant to the valuation of insurance contract liabilities and DCAT.

Prior annual guidance to the AA contains reference to historical court cases that may be still relevant for the AA's work.

AAs would also consider any changes to the provincial or federal tax system or rates that need to be incorporated into valuation or DCAT work.

9.3. Catastrophic Events

From time to time, catastrophic events occur that have the potential to affect an AA's estimate of claim liabilities and, in some cases, the premium liabilities. Events that are considered catastrophic on an industry-wide basis may not have a catastrophic effect for a given insurer, while smaller industry events may. The extent to which any event is significant in the context of the valuation of a specific insurer's insurance contract liabilities depends on the nature of the

insurer's business, its exposure in the affected region, policy wordings, and the date on which the event occurred.

The AA would consider the effect of extreme events on the following:

- Additional costs on other losses due to post-event inflation in the region as well as the rest of the country;
- The payment pattern and any change that the event may have on paid claims;
- Unallocated loss adjustment expenses (ULAE) estimates that may need to be tempered to the extent that the factor used to calculate the provision is a ratio to unpaid losses; and
- Margins for adverse deviations, particularly for recovery from reinsurance ceded.

9.4. Climate Change *(new)*

Weather-related disasters are occurring with greater frequency and magnitude than the industry has experienced in the past. In the transition period to a new climate reality, further estimation of the impact on claims is anticipated among new claim risks that will evolve within the AA's mandate as it relates to setting claims reserves and capital requirements. The recently released CIA public statement on climate change supports disclosure on climate risks on a mandatory basis by 2021 and voluntary compliance immediately. Additional resources from the Climate Change and Sustainability Committee can be found on the CIA website.

Appendix A

The following is a list of selected documents referenced in this educational note:

Standards of Practice

- *Standards of Practice*
- *Rules of Professional Conduct*

Task Force Reports

- *Materiality* (October 2007)
- *Report of the CIA Task Force on the Appropriate Treatment of Reinsurance* (October 2007)

Educational Notes

- *Guidance for the 2019 Reporting on Capital and Financial Condition Testing for Life and P&C Insurers* (August 2019)
- *Dynamic Capital Adequacy Testing* (November 2017)
- *Duration Considerations for P&C Insurers* (March 2017)
- *Use of Models* (January 2017)
- *Premium Liabilities* (July 2016)
- *Discounting and Cash Flow Considerations for P&C Insurers* (May 2016)
- *Subsequent Events* (October 2015)
- *Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice* (June 2011)
- *Accounting for Reinsurance Contracts under International Financial Reporting Standards* (December 2009)
- *Margins for Adverse Deviations for Property and Casualty Insurance* (December 2009)
- *Classification of Contracts under International Financial Reporting Standards* (June 2009)
- *Consideration of Future Income Taxes in the Valuation of Policy Liabilities* (July 2005)
- *Valuation of Policy Liabilities P&C Insurance Considerations Regarding Claim Liabilities and Premium Liabilities* (June 2003)

Research Paper

- *Disclosure Requirements IFRS 4 – Insurance Contracts for P&C Insurers* (October 2010)

CIA IFRS 17 Blog

- CIA – IFRS 17 blog (login required)

Appendix B

The following information discusses the development of standards of practice, guidance, and capital requirements under IFRS 17.

Standards of Practice

In May 2017, the IASB published the final standards for Insurance Contracts, IFRS 17. The implementation date is expected to be fiscal years beginning on or after January 1, 2022. The IASB is proposing targeted amendments to IFRS 17 to respond to concerns and challenges raised by stakeholders as IFRS 17 is being implemented. The CIA submitted comments on this exposure draft before the comment deadline of September 25, 2019. For the most current information please see the IASB website. Note that an eIFRS professional account is required to access the final standards and related documents.

The ASB Designated Group on Insurance Contract Standards of Practice, published the following document in May 2018: *Exposure Draft – Incorporate changes required by the adoption in Canada of IFRS 17 Insurance Contracts, including Principles of International Standard of Actuarial Practice 4 – Actuarial Practice in Relation to IFRS 17 Insurance Contracts, into the Canadian Standards of Practice*. The Canadian Accounting Standards Board has indicated its intention that, once adopted by the IASB, and subject to its due process, IFRS 17 will be adopted without modification for the valuation of insurance contracts in Canadian generally accepted accounting principles (GAAP) financial statements.

The International Actuarial Association (IAA) released its second Exposure Draft of Proposed International Standard of Actuarial Practice 4 (ISAP 4) on IFRS 17 Insurance Contracts in February 2019. ISAP 4 covers actuarial practice in support of valuation of insurance contract liabilities in accordance with IFRS 17. The changes proposed in the CIA exposure draft align the SOP with the requirements of IFRS 17 and incorporate the guidance of ISAP 4. These developments require changes to the Canadian Standards of Practice, as the valuation methods under IFRS 17 are significantly different from the current methods of valuation of insurance contracts in Canada.

The CIA is very active in this area, with several committees involved in reviewing the IFRS 17 standards and related guidance.

The CIA Committee on International Insurance Accounting (IIAC) under the International Affairs Council has the following mandate with regard to international accounting and actuarial standards for the valuation of insurance and related products:

- Monitor developments and ensure that news of relevant and material developments is dispersed appropriately within the CIA;
- Recommend where specific additional Canadian guidance may be helpful, and if so, assist in its development; and
- Where relevant and appropriate, provide input from a CIA perspective to the international governing bodies.

Guidance

The IIAC has published the following educational note:

- *Comparison of IFRS 17 to Current CIA Standards of Practice* highlighting the key differences between CALM and IFRS 17, which was published in draft form in September 2018.

The IAA is developing an International Actuarial Note (IAN 100). The CIA Standards and Guidance Council (SGC) has reviewed the current exposure draft of IAN 100 and released it as a draft educational note *Application of IFRS 17 Insurance Contracts* in February 2019. This note is intended to assist CIA members in the application of IFRS 17.

The PCFRC will propose additional guidance to the members as needed, in the form of educational notes and reports. At this time, the following guidance has been released:

- Draft educational note: *IFRS 17 Estimates of Expected Loss Ratios for the Minimum Capital Test* (August 2019).

The guiding principles for the development of educational notes and reports are:

- To consider Canadian-specific perspectives and address gaps in the IAN 100.
- Provide application guidance that is consistent with the IFRS 17 Standard and applicable Canadian actuarial standards of practice and educational notes, without unnecessarily narrowing the choices available in the IFRS 17 Standard.
- Consider practical implications associated with implementation of potential methods; in particular, ensure that due consideration is given to options that do not require undue cost and effort to implement.

The PCFRC has formed subcommittees to look at the following topics:

- Premium Allocation Approach (PAA) eligibility
- Discount rate selection and unwinding methodologies
- Risk adjustment for non-financial risk selection
- Reinsurance issues (both assumed and ceded)
- Expected loss ratio selection for the Minimum Capital Test
- Liability for remaining coverage (LRC) topics including loss component, coverage units, and disclosures

The CIA is also engaged in educating members about IFRS 17, through webcasts, sessions at CIA meetings, and other forums. The CIA website has an IFRS 17 blog (log in required). This members-only resource centre serves as a repository for everything about IFRS 17, including documents, links to important websites, and updates from the committees working to help members for this significant change. Moreover, the mandates of each of the subcommittees mentioned above can be found on the blog.

IFRS 9 Financial Instruments (new)

Most insurers will not adopt IFRS 9 until IFRS 17 becomes effective in 2022; however, some entities have already adopted IFRS 9, most notably those that are part of larger financial

institutions, such as bank-owned insurers. For those entities, the actuary could have seen changes in the carrying value of assets that potentially affected the valuation.

Draft Regulatory Capital Requirements and Returns

OSFI and the AMF have issued draft regulatory capital requirements guidelines; a quantitative impact study (QIS), fully harmonized between OSFI and the AMF, related to the draft MCT 2022 guideline is being conducted with submissions due October 31, 2019. The regulators plan to issue another version of the draft MCT 2022 guideline and conduct a second QIS in 2020. Data and comments collected from that exercise will be used to finalize decisions on policy issues, calibrate the MCT guideline capital requirements, and determine whether any transition measures are required. Draft P&C returns that have been adapted to reflect changes related to IFRS 17 have also been circulated to industry.

Considerations for DCAT

In principle, DCAT forecasts projecting past January 1, 2022, should be produced under IFRS 17 and the updated regulatory capital requirements guidelines. However, as neither the regulatory capital requirements guidelines nor IFRS 17 are final, many insurers are not yet able to produce reliable financial projections under IFRS 17 and may not be able to do so for the foreseeable future. In these circumstances, an appropriate practice would be to continue to perform DCAT using the current accounting standards, actuarial standards, and current regulatory capital guidelines, with additional qualitative or quantitative analysis if available. If the QIS reveals potential issues based on the new draft guideline, and the insurer has not yet filed the DCAT report, it would also be appropriate for the Appointed Actuary to describe these potential issues to the board or chief agent along with any potential mitigating actions, either in the DCAT report or through regular IFRS17 updates.

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Educational Note

Consideration of Future Income Taxes in the Valuation of Policy Liabilities

Committee on Property and Casualty Insurance Financial Reporting

July 2005

Document 205048

Ce document est disponible en français

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Educational Notes do not constitute standards of practice. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards in specific circumstances remains that of the practitioner.

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Memorandum

To: All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries practising in Property and Casualty Insurance

From: Elaine Lajeunesse, Chairperson
Committee on Property and Casualty Insurance Financial Reporting

Date: June 27, 2005

Subject: **Educational Note: Consideration of Future Income Taxes in the Valuation of Policy Liabilities**

Please find enclosed a new educational note entitled, "Consideration of Future Income Taxes in the Valuation of Policy Liabilities", which has been prepared by the Committee on Property and Casualty Insurance Financial Reporting. The purpose of this note is to provide guidance to actuaries in valuing the impact of future income taxes on policy liabilities of Property and Casualty insurers.

Tax specialists from the industry were consulted regarding the basis for determination of the asset for Future Income Taxes for balance sheet purposes.

In accordance with the Institute's policy for Due Process, this educational note has been approved by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Standards Council.

Educational notes are covered under Section 1220 of the Standards of Practice. Section 1220 prescribes that "*The actuary should be familiar with relevant educational notes and other designated educational material*." It further explains that a "*practice which the notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation*." As well, "*educational notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them.*"

All questions and comments should be addressed to Claudette Cantin at her *Yearbook A*ddress.

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CONSIDERATION OF FUTURE INCOME TAXES IN THE VALUATION OF POLICY LIABILITIES

Background

Please refer to two sections of the Standards of Practice (SOP) as follows:

Section 2130.15: *The insurer's accounting policy may report amounts related to the relevant policies and the assets which support their policy liabilities, such as […] future tax liabilities and assets (for example, those in connection with the timing differences between accounting and tax liabilities).*

Section 2210.02: *Notwithstanding Section 2100 and this Section 2200, until standards have been developed, the actuary may ignore taxes in determining policy liabilities for property and casualty insurance.*

The Practice Standards Council ("PSC") requested that the Committee on Property and Casualty Insurance Financial Reporting ("the Committee") develop a standard of practice addressing the consideration of future income tax for property and casualty companies, with a view to removing the above-noted exception. As illustrated below, however, income tax is unlikely to be a significant consideration for the valuation of property and casualty companies. Accordingly, the Committee intends to provide guidance to members by way of this educational note, rather than a standard of practice. Following the publication of this educational note, the PSC will remove the above-noted exception.

ASSET FOR FUTURE INCOME TAXES RELATED TO POLICY LIABILITIES

As detailed in Part XIV of Canadian Income Tax Regulations, the income tax deduction in respect of an insurer's claim liabilities is equal to 95% of the lesser of the *reported reserve* and *claim liability*. As defined in Regulation 1408, *reported reserve* refers to the amount of the net claim liabilities carried by the insurer, and recorded in the insurer's Annual Statement. *Claim liability* refers to the net claim liabilities determined in accordance with accepted actuarial practice (i.e., discounted to reflect the time value of money, and including explicit provisions for adverse deviations). *Reported reserve* and *claim liability* are net of amounts recoverable from reinsurers, and net of amounts recoverable in respect of salvage and subrogation.

By definition, then, the income tax deduction in respect of an insurer's claim liabilities is less than the amount of the claim liabilities recorded in the Annual Statement. This creates a "future tax temporary difference" that gives rise to an asset for Future Income Taxes. This asset for Future Income Taxes represents the prepayment of tax as a result of the liability deducted for tax purposes being less than the amount reported on the balance sheet.

Where the effect of discounting this asset for Future Income Taxes (i.e., the asset for Future Income Taxes related directly to the amount of the policy liabilities) is material, the actuary's estimate of the policy liabilities should be reduced accordingly.

EFFECT OF DISCOUNTING THE ASSET FOR FUTURE INCOME TAXES

The discussion that follows is limited to the portion of the asset for Future Income Taxes directly related to claim liabilities. A similar approach would be applied in the event that a portion of the asset for Future Income Taxes relates directly to premium liabilities.

It is anticipated that in most cases the effect of discounting the asset for Future Income Taxes would not be material to the valuation of a property and casualty insurer. In order to assess the appropriateness of that assumption, a reasonable approximation of the balance sheet effect can be derived as follows:

Estimated Effect of Discounting the Asset for Future Income Taxes	=	[*Reported Reserve*[1] – 95% x (lesser of *Reported Reserve*[1] and *Claim Liability*[1])]
		x Future Income Tax Rate
		x (1 – Present Value Factor[2])

Note:

1. As per Canadian Income Tax Regulation 1408:

   Reported Reserve = net claims liabilities amount carried in the balance sheet

   Claim Liability = net claims liabilities calculated in accordance with accepted actuarial practice.

2. The present value factor referred to above is intended to reflect the time value of money based on the selected rate of return net of the margin for investment return rate. A reasonable approximation of the present value factor can be computed from the estimated claim liabilities, as illustrated in the attached examples.

The first example attached to this educational note is based on a situation where the *Reported Reserve* is equal to the *Claim Liability*. The asset for Future Income Taxes, and the effect of discounting that asset, would be higher if the *Reported Reserve* exceeded the *Claim Liability*, as illustrated in the second example.

The effect on an insurer's income statement of discounting the asset for Future Income Taxes would be computed as the change in the balance sheet effect, as described above.

OTHER ASSETS FOR FUTURE INCOME TAXES OR LIABILITIES

The asset for Future Income Taxes and liabilities of property and casualty companies may include other components besides those relating directly to the amount of the policy liabilities. To the extent that they do not relate to the policy liabilities, the estimation of such other assets for Future Income Taxes or liabilities would not fall within the scope of the actuary's valuation of the policy liabilities.

Estimated Effect of Discounting the Asset for Future Income Taxes
XYZ Property and Casualty Insurer
Example #1 - *Reported Reserve = Claim Liability*

(1) Actuary's Estimates		
(a) Undiscounted Estimate		1,046,000
(b) Discounted Estimate Excluding PfADs[1]	987,000	
(c) PfAD – Investment Return Rate	1,000	
(d) PfAD – Claims Development	10,000	
(e) PfAD – Reinsurance Recovery	2,000	
(f) Discounted Including PfADs		1,000,000
(2) Income Tax Amounts		
(a) *Reported Reserve*		1,000,000
(b) *Claim Liability*		1,000,000
(3) Future Income Tax Rate		36%
(4) Present Value Factor = [(1b)+(1c)]/(1a)		0.9446

Estimated Effect of Discounting the Asset for Future Income Taxes	= [1,000,000 – (95% x 1,000,000)] x 36% x [1.0 - 0.9446] = $997
Estimated Effect As a % of Actuary's Estimate	= [997 / 1,000,000] = 0.10%

Although the figures used in this example are for illustrative purposes only, the following table may be helpful in assessing the sensitivity of the result to certain key assumptions, namely the discount rate and duration of the liabilities.

	Present Value Factor		**Estimated Effect of Discounting[3]**	
Discount Rate[2]	**4-Year Payout[4]**	**10-Year Payout[5]**	**4-Year Payout[4]**	**10-Year Payout[5]**
3% per annum	0.9712	0.9211	0.05%	0.14%
6% per annum	0.9446	0.8538	0.10%	0.26%
10% per annum	0.9121	0.7781	0.16%	0.40%

Notes:

1. PfAD: Provision for Adverse Deviations.
2. The selected discount rates have been reduced by an investment return rate PfAD.
3. The estimated effect of discounting the asset for Future Income Taxes is expressed as a percentage of the actuary's estimate of the net claim liabilities discounted in accordance with accepted actuarial practice, and including explicit provisions for adverse deviations.
4. The selected 4-year payout (70/15/10/5) results in an average duration of about 1 year.
5. The selected 10-year payout (25/20/15/12.5/10/7/5/2.5/2/1) results in an average duration of about 2.85 years.

Estimated Effect of Discounting the Asset for Future Income Taxes
XYZ Property and Casualty Insurer
Example #2 - *Reported Reserve > Claim Liability*

(1) Actuary's Estimates		
(a) Undiscounted Estimate		1,046,000
(b) Discounted Estimate Excluding PfADs[1]	987,000	
(c) PfAD – Investment Return Rate	1,000	
(d) PfAD – Claims Development	10,000	
(e) PfAD – Reinsurance Recovery	2,000	
(f) Discounted Including PfADs		1,000,000
(2) Income Tax Amounts		
(a) *Reported Reserve*		1,078,000
(b) *Claim Liability*		1,000,000
(3) Future Income Tax Rate		36%
(4) Present Value Factor = [(1b)+(1c)]/(1a)		0.9446

Estimated Effect of Discounting the Asset for Future Income Taxes	= [1,078,000 – (95% x 1,000,000)] x 36% x [1.0 - 0.9446] = $2,553
Estimated Effect As a % of Actuary's Estimate	= [2,553 / 1,000,000] = 0.26%

Although the figures used in this example are for illustrative purposes only, the following table may be helpful in assessing the sensitivity of the result to certain key assumptions, namely the discount rate and duration of the liabilities.

	Present Value Factor		**Estimated Effect of Discounting[3]**	
Discount Rate[2]	**4-Year Payout[4]**	**10-Year Payout[5]**	**4-Year Payout[4]**	**10-Year Payout[5]**
3% per annum	0.9712	0.9211	0.13%	0.36%
6% per annum	0.9446	0.8538	0.26%	0.67%
10% per annum	0.9121	0.7781	0.41%	1.02%

Notes:

1. PfAD: Provision for Adverse Deviations
2. The selected discount rates have been reduced by an investment return rate PfAD.
3. The estimated effect of discounting the asset for Future Income Taxes is expressed as a percentage of the actuary's estimate of the net claim liabilities discounted in accordance with accepted actuarial practice, and including explicit provisions for adverse deviations.
4. The selected 4-year payout (70/15/10/5) results in an average duration of about 1 year.
5. The selected 10-year payout (25/20/15/12.5/10/7/5/2.5/2/1) results in an average duration of about 2.85 years.

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Revised Educational Note

Discounting and Cash Flow Considerations for P&C Insurers

Committee on Property and Casualty Insurance Financial Reporting

May 2016

Document 216058

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members.

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MEMORANDUM

To: All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries

From: Pierre Dionne, Chair
Practice Council

Julie-Linda Laforce, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: May 24, 2016

Subject: **Revised Educational Note: Discounting and Cash Flow Considerations for P&C Insurers**

Please find enclosed a revised educational note, Discounting and Cash flow Considerations for P&C Insurers, which has been prepared by the Committee on Property and Casualty Insurance Financial Reporting. This represents an update and replacement of the 2010 educational note Discounting to provide additional guidance to actuaries.

This educational note provides explicit guidance in three areas where no such guidance is provided in the Standards of Practice, namely the consistency in the cash flow for portfolio selection, the selection of a discount rate for the estimation of ceded liabilities, and the discounting of future costs associated with premium liabilities.

The approaches outlined in this educational note are intended to reflect current practice for most property and casualty (P&C) actuaries in Canada. However, we are also aware of alternative approaches that are based on different but valid interpretations of the Standards of Practice and previous educational notes. As we continue to develop guidance on the subject of discounting, we intend to explore these other approaches more fully, and to seek further input from members.

In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents, this educational note has been endorsed by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on May 17, 2016.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material*." That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational

Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

Should you have any queries or comments regarding this educational note, please contact Julie-Linda Laforce at julielindalaforce@axxima.ca.

PD, JLL

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1. Introduction and Scope

This educational note addresses the discounting aspect of the valuation of policy liabilities in the context of financial reporting for property and casualty (P&C) insurance companies.

The determination of the actuarial present value of the policy liabilities involves the following fundamental elements, each of which is addressed in this educational note:

- The estimation of cash flows arising from the claim liabilities and premium liabilities;
- The selection of discount rates;
- The calculation of the present value of the claim liabilities and premium liabilities; and
- The application of margins for adverse deviations.

This educational note applies to the actuarial present value of the policy liabilities on gross, ceded, and net bases.

For some policy liabilities (e.g., amounts in respect of Facility Association, intercompany pooling, or reinsurance arrangements), it may be appropriate to use the policy liabilities determined on an actuarial present value basis as determined by a qualified actuary reporting on behalf of the ceding entity. Refer to the Standards of Practice (SOP) of the Actuarial Standards Board, subsection 1610 – Actuary's use of another person's work.

Other considerations may apply for applications other than financial reporting, for example, the purchase or sale of an insurance company, or the determination of fair value policy liabilities.

The following educational notes are referenced in the commentary that follows, and may serve as additional useful guidance to actuaries:

- Margins for Adverse Deviations for Property and Casualty Insurance (December 2009), Committee on Property and Casualty Insurance Financial Reporting
- Premium Liabilities (Revised March 2015), Committee on Property and Casualty Insurance Financial Reporting
- Investment Return Assumptions for Non-Fixed Income Assets for Life Insurers (March 2011), Committee on Life Insurance Financial Reporting
- Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities (September 2014), Committee on Life Insurance Financial Reporting

2. General

2.1 Terminology

To the extent possible, the terminology used in this educational note is consistent with

the SOP. In some cases, however, the definitions have been modified for greater clarity and for consistency with common usage among P & C actuaries. Specifically, it is common practice first to evaluate the policy liabilities on an undiscounted basis, then to consider the time value of money, and lastly to add a provision for adverse deviations (PfAD). Accordingly, we have defined present value (PV) to reflect the time value of money only, and actuarial present value (APV) to be the sum of PV and the PfAD.

Undiscounted	The sum of expected future payments before recognizing the time value of money.
Discount Rate	The expected investment return rate used for calculating the present value of a series of cash flows.
Payment Pattern	The expected distribution of future payments for a given accident, underwriting, or report period.
Duration	The weighted average timing of a series of future cash flows. Duration is often used as a measure of the sensitivity to change in interest rates on a series of cash flows.
Present Value (PV)	The sum of expected future payments after recognizing the time value of money.
Margin for Adverse Deviations (MfAD)	The SOP, paragraph 1110.31, defines margin for adverse deviations as "the difference between the assumption for a calculation and the corresponding best estimate assumption." It is a factor applied to the present value of a best estimate or to the best estimate of an assumption to reflect its uncertainty.
Provision for Adverse Deviations (PfAD)	The SOP, paragraph 1110.39, defines provision for adverse deviations as "the difference between the actual result of a calculation and the corresponding result using best estimate assumptions." It is the additional provision resulting from the application of a margin for adverse deviations.
Actuarial Present Value (APV)	The sum of the present value and the provision for adverse deviations (i.e., APV = PV + PfAD)
Claim Liabilities	The SOP, paragraph 1110.13, defines claim

	liabilities as "the portion of insurance contract liabilities in respect of claims incurred on or before the balance sheet date." Claim liabilities include indemnity amounts and internal and external (allocated and unallocated) claims adjustment expense amounts.
Premium Liabilities	The SOP, paragraph 1110.37, defines premium liabilities as "the portions of insurance contract liabilities that are not claim liabilities." Premium liabilities include the expected costs in connection with the unexpired portion of the in-force insurance contract (i.e., incurred after the valuation date) and all other liabilities related to premium development adjustments (e.g., retro-rated premium and contingent profit commissions). For additional details, refer to the revised educational note Premium Liabilities (released March 2015).

2.2 Discounting Basis (Gross, Ceded, Net)

The following relationship applies whether estimates are on an undiscounted, PV or APV basis:

Net = Gross – Ceded

Normally, amounts or assumptions are estimated directly on two of the three bases above, while the amounts or assumptions on the third basis are computed from the above relationship. The estimation of cash flows, for example, would generally be on a basis consistent with the analysis on an undiscounted basis of claim liabilities and premium liabilities. Regardless of which two of these bases are estimated directly, care would be taken to assess the reasonableness of the third estimate or set of assumptions computed from those on the first two bases. The following are considerations for selecting which two bases are to be estimated directly:

Data availability—It may not be appropriate to directly estimate the ceded present value, for example, if there is a sparse or limited history of ceded data.

Cash flow volatility—Different approaches may be warranted for different lines of business depending on the volatility of cash flows by line.

Reinsurance program—Consideration would be given to the type and consistency of a company's reinsurance programs. For example, it may not be appropriate to use the net as a starting point if the company's net retention level has changed significantly over the experience period.

If the discount rate used for calculating the ceded present value is different from the rate used to calculate the net present value then the gross present value would be

determined as net present value plus ceded present value. If one discount rate is used to estimate the ceded present value and net present value, then any two of the three bases would be estimated directly, subject to the other considerations listed above.

3. Policy Liabilities Cash Flow

3.1 Cash Flow Associated with Claim Liabilities

The first step in deriving the actuarial present value is to estimate the cash flow associated with the claim liabilities in order to derive the present value of expected claim and claim adjustment expense payments. Expected claim payments are calculated by applying an expected payment pattern to the undiscounted unpaid claims. Selected payment patterns would reflect the actuary's best estimate with regard to the timing and amount of payments including, where applicable, both indemnity and claims adjustment expenses. It may be appropriate to assume that the payment pattern for indemnity and/or external (allocated) claims adjustment expenses also applies to internal (unallocated) claims adjustment expenses.

Claims would be subdivided into reasonably homogeneous groups for the selection of payment patterns. Consideration would be given to the following:

- The groupings used for the valuation of the liabilities on an undiscounted basis;
- The payout period (i.e., the length of time over which payments are expected to be made for a group of claims); and
- The existence of a predetermined schedule of payments for a group of claims.

Selected payment patterns would normally be derived from the company's historical experience. To the extent that a company's historical experience does not exist (e.g., for a line not previously written by the company) or does not have a reasonable level of credibility (e.g., for a company with very low claims volume, or for a line of business such as surety that may have low predictive value), it may be necessary to supplement such experience with other related or external experience. To the extent possible, such other experience would reflect the expected payment and timing characteristics of the grouping under consideration.

Within a grouping, payment patterns may vary by accident or underwriting period to reflect, for example, changes in legislation, mix of business, reinsurance or claims settlement practices.

Timing of expected salvage, subrogation, reinsurance recovery, and loss transfer amounts would be considered in the selection of payment patterns. Gross, ceded, and net payment patterns are likely to be the same for a given line of business if the insurer's reinsurance is in the form of quota-share reinsurance.

For a given line of business, the selected payment patterns would normally be consistent with assumptions used in the estimation of the undiscounted liabilities. For example, expected payment patterns are commonly derived on the basis of historical ratios of paid losses to selected ultimate losses at various maturity dates. Alternatively,

the claim payment patterns may be derived directly from the selected paid development factors if such factors are consistent with the assumptions underlying the selected ultimate amounts.

3.2 Cash Flow Associated with Premium Liabilities

The different cash flow considerations associated with premium liabilities are described in detail in the revised educational note Premium Liabilities, and are summarized below.

Different payment patterns may be selected for each of the individual components of the premium liabilities, such as future claim costs, servicing or maintenance expenses, and future reinsurance costs.

For future claim costs, the payment patterns would normally be consistent with those associated with claim liabilities (refer to section 3.1). Adjustments may be required to reflect the following:

- The average accident date and average payment date underlying future claim costs;
- Legislative or product changes; and
- Other considerations similar to those affecting the payment patterns associated with claim liabilities.

Servicing or maintenance expenses are generally paid over the earning period of the unexpired term of in-force policies. The time value of money may not be material for such expenses and the APV of these items may be equal to the undiscounted value.

In determining the cash flow of future reinsurance costs the actuary would consider the following:

- The timing of the payment of applicable reinsurance premiums;
- The earning period of the unexpired portion of in-force policies; and
- The potential for future reinsurance costs to change (increase or decrease), due to market pressures, changes in the underlying portfolio, or other factors.

Generally, future reinsurance costs are paid over the earning period of the unexpired term of in-force policies. The time value of money may not be material for such expenses and the actuarial present value of these items may be equal to the undiscounted value.

Additional considerations may be required on other items such as installment premiums.

4. Asset Cash Flow and Discount Rate

As stated in the SOP, subsection 2240 – Present values,

> The expected investment return rate for calculation of the present value of cash flow is that to be earned on the assets, taking into account reinsurance recoverables, that support the insurance contract liabilities. [The expected investment return rate] depends on

the method of valuing assets and reporting investment income,

the allocation of those assets and that income among lines of business,

the return on the assets at the balance sheet date,

the yield on assets acquired after the balance sheet date,

the capital gains and losses on assets sold after the balance sheet date, and

investment expenses, and losses from default (C-1 risk).

The actuary need not verify the existence and ownership of the assets at the balance sheet date, but would consider their quality.

Investment return rates (discount rates) are used to discount the expected future payment streams to their equivalent PV.

The discount rates may vary from one claim grouping to the next, from one future period to the next, or from one underlying accident or underwriting period to the next, although it is common to use a single rate for all years and product lines.

The following commentary addresses the derivation or estimation of a portfolio yield rate to determine the present value of the net policy liabilities and considerations affecting the selection of discount rates used to determine the present value of the ceded policy liabilities and gross policy liabilities.

4.1 Selection of Portfolio

The assets that are included in the portfolio for the purpose of estimating a discount rate may vary depending on the circumstance of the organization. Invested assets, such as those invested in fixed income securities, are commonly included as part of the portfolio. Other invested assets, such as those invested in non-fixed income securities, as well as assets such as cash or receivables may be excluded from the portfolio, subject to other considerations described below.

Invested assets may be segregated between investments supporting the policy liabilities (or a portion thereof) and the remaining investments supporting surplus (equity) and other liabilities as applicable, in accordance with the organization's investment policy. In such cases, the actuary may rely on the investment policy to segregate invested assets for inclusion in the selected portfolio. For example, the investment policy may dictate that invested assets be invested in fixed and non-fixed income securities in a ratio that mirrors the ratio of policy liabilities versus surplus. In this case, the actuary may elect to include only fixed income securities in the portfolio.

The actuary may also consider characteristics such as the credit rating, duration, and time to maturity of invested assets in selecting the portfolio.

In addition to the considerations listed above, the assets selected for the purpose of estimating a discount rate would meet the following criteria:

- The selected assets would be sufficient to support the net policy liabilities; and

- The selected assets would generate a cash flow that is consistent with the cash flows associated with the net policy liabilities.

Although it is common practice to select a single discount rate to be applied to both net premium liabilities and net claim liabilities, the comments in this section would apply even if distinct discount rates were derived for purposes of discounting subsets of the overall net policy liabilities.

If the book value of the investment portfolio is insufficient to support the net policy liabilities, then the expected yield on other (non-investment) assets would be considered. A blended rate would be estimated assuming an appropriate yield on such non-investment assets, as discussed in section 4.2. The book value of an asset may be equal to the market value, the amortized value, or such other value consistent with Canadian generally accepted accounting principles.

The asset cash flow is made up of maturing values, liquidated values, income from dividends and coupons, cash including collection of receivables, and other asset-related income attributable to the selected portfolio. The asset cash flow is considered to be consistent with the relevant liabilities cash flow if the amount of the two cash flows is approximately the same in each period, in which case the average asset duration would be consistent with the average duration of the net policy liabilities.

Where matching is not evident, for example when an insurer does not have a rigorous policy in place, the actuary would consider whether the cash flows are sufficient to warrant the use of the portfolio selected for the purposes of estimating a discount rate. If sufficient, the asset portfolio would be expected to give rise to cash flow in each period that would at least provide for the net liabilities cash flow in that period.

By definition, consistency of cash flows would be assessed through the application of a comprehensive cash flow matching model for purposes of deriving a discount rate. An example of such a model is described in section 4.6.

Below is an example of a simple approach for assessing the sufficiency of the asset cash flow when a comprehensive cash flow matching model is not used. In this context, the net cash flow in a period is computed as the asset cash flow in that period less the liabilities cash flow in that period. Appendix A summarizes the scenarios presented in Appendices B, C and D. Each of Appendices B, C, and D provide “a more detailed example” as referenced here.

Net Cash Flow				
Period	**Asset Cash Flow**	**Liabilities Cash Flow**	**Net Cash Flow**	**Cumulative Cash Flow**
t+1	33,000	26,000	+7,000	+7,000
t+2	13,000	9,800	+3,200	+10,200
t+3	6,000	4,800	+1,200	+11,400
t+4	2,500	3,100	-600	+10,800
t+5	2,900	2,200	+700	+11,500
Total	**57,400**	**45,900**	**+11,500**	**-**

Ideally, the net cash flow in each period would be positive. The actuary would consider the timing and magnitude of any negative values for net cash flow (such as in period t+4, above), and the extent to which such incremental negative values would cause the cumulative net cash flow to be negative. In this case, it is obvious that positive net cash flows in the first three periods are more than sufficient to cover the negative cash flow in period t+4,without consideration of the expected rate of return on reinvested assets.

For more complex cases, refer to section 4.3 for a discussion of reinvestment of positive cash flows, and liquidation of assets to address negative cash flows.

4.2 Portfolio Yield Rate

A portfolio yield rate is the internal rate of return (IRR) at which the present value of all future cash flows is equal to the current book value of the portfolio. The portfolio yield rate to maturity of a single Government of Canada bond, for example, would be the IRR such that the current book value of the bond is equal to the sum of the present value of future coupons, and the present value of the par value of the bond (i.e., the book value at maturity).

In some cases, an insurer's investment specialist will provide the actuary with an estimate of the portfolio IRR. Paragraph 1610.01 of the SOP states that "The actuary may use and take responsibility for another person's work if such actions are justified."

The actuary may not have available detail regarding the characteristics of each investment required to precisely determine the asset cash flows in order to estimate the portfolio IRR. A weighted average of the yield rates of individual assets may be used as an approximation of the portfolio IRR if, for example, the weights applied to each asset are equal to the product of the duration and the book value of that asset.

A simple example of an IRR calculation is shown in Appendices B, C, and D, along with the approximation referred to above.

Fixed Income Securities

The following points would be considered when calculating the IRR of fixed income securities:

- T-Bills are sold at a discount and mature at par value. T-Bill "coupon rates" are generally the nominal simple discount rate quoted in most publications. This is the normal convention used for these and similar instruments in Canada. The market convention may be different in other countries.
- It is common for the yield on a bond portfolio to be quoted as a nominal yield, compounded semi-annually. If so, the actuary may need to convert this rate to an equivalent annual effective interest rate.
- Some bonds have call features that result in redemption prior to maturity, which may impact their valuation.
- Accrued investment income is often held by a company in a separate account, but would be included by the actuary in the book value of bonds.
- Retractable preferred shares, and preferred shares with rate reset options, may lend themselves to the same IRR treatment as bonds.

Non-Fixed Income Securities

The following educational notes issued by the Committee on Life Insurance Financial Reporting (CLIFR) may provide useful guidance regarding the calculation of IRR on non-fixed income securities held by P&C insurers.

- Investment Return Assumptions for Non-Fixed Income Assets for Life Insurers (March 2011); and
- Investment Assumptions Used in the Valuation of Life and Health Insurance Contract Liabilities (September 2014).

These educational notes were developed for financial reporting of life and health insurers. In applying the underlying concepts to P&C insurers' valuations, consideration would be given to characteristics of the insurer's claim liabilities, such as the estimated duration of those liabilities, that distinguish them from those of a life and health insurer.

Listed below are illustrations of considerations discussed in the SOP and guidance pertaining to life and health insurance that might be applicable to P&C insurance:

- The actuary's "best estimate of investment return on a non-fixed income asset would not be more favourable than a benchmark based on historical performance of assets of its class and characteristics" [SOP, paragraph 2340.11].
- Guidance from CLIFR suggests that the longest possible historical period is the most appropriate for determining the best estimate of investment return, because the projection period for life and health valuations is very long and possibly even longer than the longest reliable historical period.
- "… the amount of non-fixed income assets supporting liability cash flows at the balance sheet date and at each duration in the projection does not exceed the amount required to support 20% of cash outflows for the first 20 years and 75% thereafter …". [SOP, paragraph 2340.14.1]

Assets with 0% IRR

Normally, the IRR associated with cash and cash equivalents is 0%. If the level of cash held at the valuation date is unusually large, however, it may be appropriate to assume that excess cash will be invested in accordance with the company's investment strategy.

Other assets for which the IRR is normally considered to be 0% include receivables from agents and brokers, policyholders, instalment premiums, and other insurers.

When uncollected premiums (accounts receivable) are included in the assets backing the premium liabilities, it may be appropriate to assume that these amounts will be invested when collected at some future date, and thus will generate investment income over the remaining duration of the premium liabilities.

4.3 Discount Rate – Present Value of Net Policy Liabilities

For the purposes of financial reporting, a portfolio yield rate would be used as the basis for selecting a discount rate for estimating the PV of net policy liabilities. Normally, the same discount rate would be used in the estimation of the PV of both net premium liabilities and net claim liabilities.

Reinvestment Risks and Liquidation of Assets

Unless the asset cash flow is consistent with the liability cash flow, the actuary would consider the effect of reinvesting positive net cash flow, or the effect of the liquidation of assets to address negative net cash flow.

To the extent that reinvestment is required, the actuary would consider the expected future reinvestment rate for new money and the company's investment strategy. For example, the actuary would consider the following: whether the insurer's strategy is one of growth, or a "buy and hold" strategy; whether reinvestment is expected to be in the form Government of Canada bonds; or whether the insurer has a policy for reinvestment of dividends received.

The actuary would also consider if it will be necessary to liquidate a portion of invested assets by determining whether or not the current or future asset portfolio has appropriately scheduled maturity dates and sufficient liquidity to cover the future payments needed.

As an alternative to liquidation of existing assets in the event of negative net cash flow, the actuary may consider expected cash flow from future business. Such cash flow would be the net cash flow after consideration of the payout of expected claims and expenses, as well as the receipt of premiums and other revenue items. In this context, future business would be limited to future renewals on existing in-force policies, after consideration of the company's expected retention rate.

After consideration of future reinvestment and liquidation of assets, the selected discount rate would be a blended rate based on the current portfolio yield rate, expected future reinvestment rates, and the expected capital gain or loss arising from premature liquidation.

Refer to section 4.1 for a discussion of cash flow consistency. Section 4.6 provides an illustration of the use of a comprehensive cash flow matching model for the purposes of selecting a discount rate.

Investment Expenses

The actuary would consider the expected expenses to be incurred in connection with the investment of assets. It may be reasonable, for example, to reduce the discount rate based on historical investment expenses.

Asset Depreciation Risk

The actuary would consider reducing the discount rate to reflect expected losses due to credit-related events, including default, impairment, or restructuring of obligations by the issuer of the invested assets. The actuary would consider the impact that a concentration of investments might have on such expected asset depreciation risk. Unexpected asset depreciation risk would be considered by the actuary in the context of selection of the credit risk component of the investment return rate margin for adverse deviations.

4.4 Discount Rate – Present Value of Ceded Policy Liabilities

Ceded liabilities are shown as recoverable amounts (assets) in the balance sheet. As such, they are not supported by a company's investments. It is reasonable to assume that liabilities ceded to another insurer are supported by assets held by that insurer. Normally, it would be appropriate to reflect the time value of money in the estimation of ceded liabilities. The discount rate used to determine the PV of ceded policy liabilities may be selected from the following or a combination thereof:

- The discount rate selected for the estimation of the PV of net policy liabilities (i.e., a portfolio yield rate);
- A risk-free rate; and
- The discount rate used by the assuming company, such as in the case of cessions to an affiliated company.

The use of a rate based on the portfolio yield for the estimation of the PV of ceded policy liabilities may be appropriate if the company's investments are sufficient to support its gross policy liabilities, or if the assets held by the assuming company to support its net policy liabilities are considered to be similar to the ceding company's investment portfolio. In cases where a high proportion of a company's policy liabilities are ceded to other insurers, the actuary may give more weight to the other bases shown above, i.e., a risk-free rate, or a discount rate used by the assuming company.

The use of a risk-free rate would reflect the current or new money investment return rate for a risk-free or other prudently invested portfolio of assets with appropriate duration. For example, the risk-free rate may be determined using the average market yield on a series of government bonds that match the expected liability duration.

4.5 Discount Rate – Present Value of Gross Policy Liabilities

If it is determined that it is appropriate to use the same discount rate for estimating the PV of ceded policy liabilities as was used to estimate the PV of net policy liabilities, then the PV of gross policy liabilities may be estimated directly using that same discount rate.

If the PV of ceded policy liabilities is estimated using a risk-free rate, or the assuming company's discount rate, then the implied rate underlying the estimation of the PV of the gross policy liabilities is not necessarily equal to the selected portfolio yield rate underlying the PV of net policy liabilities. In such cases, the implied gross discount rate would be computed from the PV (ceded PV + net PV) and the cash flows (ceded cash flows + net cash flows) pertaining to the gross policy liabilities.

4.6 Discount Rate Based on a Comprehensive Cash Flow Matching Model

Section 4.2 describes the selection of a discount rate based on a portfolio yield rate. This approach may be refined by incorporating a comprehensive cash flow matching model. An example is presented in Appendices B and D. In the model shown, the net cash flow for each period is computed as the asset cash flow less the policy liabilities cash flow for that period. A positive net cash flow in a period is reinvested, but only to the extent required to offset negative net cash flows in future periods. Any excess cash flows (i.e., positive cash flows in excess of the amounts required to offset negative cash flows over the course of all periods) are removed from consideration. The discount rate is then determined as the IRR from the market value of initial asset and the total outflow, either from claim payment or the cash withdrawal.

Unless the model is refined to include investment expenses, the resulting IRR would be reduced to reflect the expected level of investment expenses.

If the asset cash flow and policy liabilities cash flow are perfectly matched, the IRR based on this comprehensive cash flow matching model would be the same as the portfolio rate of return described in section 4.2.

5. Actuarial Present Value

Policy liabilities should be calculated on an APV basis, consistent with the SOP. The APV includes the time value of money and explicit PfADs (claims development, investment return rates, and recovery from reinsurance ceded).

5.1 Margins for Adverse Deviations

According to the SOP, paragraph 2250.03,

> The actuary would include a margin for adverse deviations in the assumptions for
>
> claims development,
>
> recovery from reinsurance ceded, and
>
> investment return rates.

Claims development

According to the SOP, paragraph 2250.04, "The margin for adverse deviations for claims development would be a percentage of the claim liabilities excluding provision for adverse deviations." Therefore the PfAD is determined by applying a margin to the PV. The claims development margin may vary by year and by line of business, and may vary between gross, ceded, and net liabilities.

Recovery from reinsurance ceded

According to the SOP, paragraph 2250.05, "The margin for adverse deviations for recovery from reinsurance ceded would be a percentage of the amount deducted on account of reinsurance ceded in calculating the premium liabilities or claim liabilities, as the case may be, excluding provision for adverse deviations." Therefore, the PfAD is determined by applying a margin to the ceded PV. The PfAD is deducted from the ceded PV and added to the net PV. The margin for recovery from reinsurance ceded may vary by year and line of business.

Investment return rates

According to the SOP, paragraph 2250.06, "The margin for adverse deviations for investment return rate would be a deduction from the expected investment return rate per year." Therefore, the PfAD is determined as the difference between PV calculations, before application of other margins, using two different discount rates:

The selected discount rate minus the investment return rate margin; and

The selected discount rate.

The margin for investment return rate may vary by year and by line of business, and may vary between gross, ceded, and net liabilities. The margin consists of three elements: asset/liability mismatch risk margin, timing risk margin, and credit risk margin.

The educational note Margins for Adverse Deviations for Property and Casualty Insurance provides additional guidance on the selection of MfADs.

5.2 Claim Liabilities

The resulting APV of claim liabilities are computed as follows:

Gross APV	=	Gross PV
	+	PfAD for claims development (gross)
	+	PfAD for investment return rate (gross)
Ceded APV	=	Ceded PV
	+	PfAD for claims development (ceded)
	+	PfAD for investment return rate (ceded)
	-	PfAD for recovery from reinsurance ceded

Net APV	=	Net PV
	+	PfAD for claims development (net)
	+	PfAD for investment return rate (net)
	+	PfAD for recovery from reinsurance ceded

In the above equations

Gross	=	Net + Ceded
PfAD for claims development (gross)	=	PfAD for claims development (net)
	+	PfAD for claims development (ceded)
PfAD for investment return rate (gross)	=	PfAD for investment return rate (net)
	+	PfAD for investment return rate (ceded)

5.3 Premium Liabilities

The PfAD would be calculated by applying selected margins to the PV of the estimated future claim and claim adjustment expenses. The calculation of the PfAD associated with premium liabilities would be similar to the calculation of the PfAD associated with claim liabilities as described in section 5.2. The actuary would consider different MfADs if premium liabilities and claim liabilities exhibit different levels of uncertainty. Generally, for example, there would be greater uncertainty for claims that have yet to occur, such as those arising from the unexpired portion of in-force business, than for claims that occurred in a prior period.

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Educational Note

Duration Considerations for P&C Insurers

Committee on Property and Casualty Insurance Financial Reporting

March 2017

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

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MEMORANDUM

To: Members in the property and casualty insurance area

From: Pierre Dionne, Chair
Practice Council

Raul Martin, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: March 7, 2017

Subject: **Educational Note: Duration Considerations for P&C Insurers**

This educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting in accordance with the Institute's Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents, and received final approval for distribution from the Practice Council on February 28, 2017.

This guidance was published previously in the 2013-2015 Guidance to the Appointed Actuary for Property & Casualty Insurers, and going forward will be available as a stand-alone educational note.

As outlined in subsection 1220 of the Standards of Practice, "The actuary should be familiar with relevant Educational Notes and other designated educational material". That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation". As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them".

Questions or comments regarding this educational note may be directed to Raul Martin at jscp@jscp.com.

PD, RM

Introduction and Scope

The Committee on Property and Casualty Insurance Financial Reporting (PCFRC) of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to actuaries doing work for property and casualty (P&C) insurers related to duration of the insurer's interest rate sensitive claim liabilities, premium liabilities and assets.

In this document, the term "P&C returns" refers to the uniform returns approved by the Canadian Council of Insurance Regulators. The term "MCT Guideline" refers to the Minimum Capital Test (MCT) Guideline issued by the Office of the Superintendent of Financial Institutions (OSFI) or the version approved for use by provincial regulatory authorities.

Duration has become an increasingly relevant topic for a variety of reasons, including but not limited to the following:

- The MCT Guideline requires the calculation of estimated duration of insurer's interest-rate-sensitive assets, claim liabilities, and premium liabilities for purposes of the interest rate risk margin;
- Duration may be required for the estimation and selection of the margin for investment return rates in applying concepts from the educational note Margins for Adverse Deviations for Property and Casualty Insurance;
- Many insurers are employing the strategy to duration match liabilities to assets to help immunize the impact of relatively small shifts in the market yield curve on surplus; and
- Duration is a consideration in modelling market risk.

Furthermore, there are different interpretations on how duration is to be determined for certain asset classes (e.g., preferred shares).

Duration Defined

Duration is a concept or tool that is used to measure both the average maturity of a series of fixed future cash flows, as well as to measure the sensitivity that interest rate changes have on the present value of a series of future cash flows. The calculation of the duration will depend on the duration measure chosen. The three most common types of duration measures are the following:

- *Macaulay duration* is computed as the weighted average of the time to each cash flow payment, using the present value of the future cash flow payment as weights. The Macaulay duration is calculated as follows:

- Macaulay Duration $= \frac{\sum_{t=0}^{n} t \times \text{PVCF}_t}{k \text{ x } \sum_{t=0}^{n} \text{PVCF}_t}$
- Where:

t	=	time to future cash flow payment
yield	=	market value yield to maturity of the cash flows consistent with *k* time period definition
k	=	number of periods, or payments, per year (e.g., k=2 for semi-annual periods)
n	=	number of periods until maturity (i.e., number of years to maturity times *k*)
PVCF_t	=	present value of the cash flow in period *t* discounted at the yield rate or market value of securities

- **Modified duration** measures the sensitivity of the present value of a series of fixed future cash flows to changes in interest rates. It is calculated as the following:
  - Modified Duration $= \frac{\text{Macaulay Duration}}{1+\text{Yield}}$
- **Effective duration** also measures the sensitivity of the present value of a series of fixed future cash flows and will give a similar estimate as the modified duration approach. In addition, the effective duration measures the fair value sensitivity of assets where interest rate changes would change future cash flows, such as in the case of interest rate derivatives, callable bonds, option embedded assets, etc. For example, bonds with embedded options may be called early, and therefore the yield to maturity would change on the bond and so the modified duration formula would no longer be an appropriate measure to use. The effective duration is calculated as the following:
  - Effective Duration $= \frac{\text{Fair value if yields decline} - \text{fair value if yields rise}}{2 \times \text{initial price} \times \text{change in yield in decimal}}$
  - or Effective Duration $= \frac{V_- - V_+}{2 \times V_0 \times \Delta y}$
  - Where:

Δy	=	change in yield in decimal
V_0	=	initial fair value
V_-	=	fair value if yields decline by Δy
V_+	=	fair value if yields increase by Δy

It is important to note that for the purpose of the MCT, the Macaulay duration is an intermediate step in the calculation of the interest rate sensitivity of an asset or liability and is *not* a measure of duration accepted by regulators. It is also necessary that the duration be

measured on an annual basis for the MCT interest rate margin calculation, as the application of the interest rate shock is measuring the impact of annual interest rate sensitivities. In other words, the definition of the duration needs to be consistent with the definition of the yield rate in terms of period of time, otherwise the results will be incorrect.

Also worth mentioning is that both the modified and effective durations provide only approximations of the sensitivity that changes in interest rates have on the present value of future cash flows. Both of these duration measures provide exact percentage changes for very small changes in interest rate (e.g., one basis point), but are generally less accurate for large changes, as the relationship between the change in interest rate and the change in present value of future cash flows is not linear. More accurate approximations of the impact of changes in interest rates on the present value of future cash flows can be achieved through considering the curvature (or convexity) of the price-yield relationship.

In an attempt to manage the effect that changes in interest rates have on their surplus position, insurers often endeavour to match the duration of their liabilities and assets. This approach is considered good practice. However, it can be demonstrated that there may be future cash flow shortfalls even in situations where the duration of liabilities and assets are perfectly matched. Accordingly, actuaries would consider future net cash flows as well as durations. The value of doing so is demonstrated in the educational note Discounting and Cash Flow Considerations for Property and Casualty Insurers (May 2016).

In the calculation of the interest rate risk margin, an interest rate shock factor is applied to the fair value of interest rate sensitive assets and liabilities and their duration. Actuaries are often involved in the calculation of the duration of liabilities and depending on the size of the insurer, may also be asked for support on the duration of assets.

Instructions on the calculation of the interest rate risk margin are provided in the MCT Guideline. The key points for the calculation of the duration are the following:

- Insurers may use either the modified duration or the effective duration to calculate the duration of assets and liabilities. However, the same duration methodology would apply to all assets and liabilities under consideration. Moreover, the same methodology is to be used consistently from year to year.
- Effective duration is the required measure when interest rate changes may change the expected cash flows.
- The portfolio duration can be obtained by calculating the weighted average of the duration for the assets or liabilities in the portfolio with the weights being proportional to the fair value of the cash flows or securities.

The following sections describe the theory and include some examples behind the calculations of duration of liabilities (both premium and claim) as well as assets.

Duration of Interest-Rate-Sensitive Liabilities

When evaluating the duration of the claim and premium liabilities, actuaries would consider the following:

- Assumptions underlying the duration calculation would be consistent with those underlying the discounting calculation (e.g., timing of payout) from the actuary's valuation work.
- The duration may be calculated by line of business using the payout patterns used for discounting. The line of business durations would then be weighted, using actuarial present value (APV) as weights, to derive the total premium or claim liabilities duration. This point is illustrated in appendix A, sheets 2 through 4.
- Alternatively, the duration may be evaluated for all lines of business on a combined basis, with the use of the effective duration approach. This point is illustrated for the duration of premium liabilities in appendix C.
- When the change in interest rate is small, the modified duration and effective duration are approximately the same, and the effective duration can be used to assess the reasonableness of the calculation of the modified duration, or even as a proxy for modified duration if appropriate.
- For premium liabilities, the following additional considerations apply:
  - The calculation would be adjusted for the future accident date; and
  - The future accident date would be adjusted to reflect policy terms of other than 12 months.
- For the purposes of input into the MCT calculation, the duration would be net of reinsurance and net of salvage and subrogation.

Interest-rate-sensitive liabilities include those for which the values are determined on a present value (PV) or actuarial present value basis. In accordance with the MCT Guideline, the interest-rate-sensitive liabilities to be included in the calculation of the interest rate risk margin are those for which their fair value will change with movements in interest rates. The following liabilities are considered sensitive to interest rates and are to be included:

- Net unpaid claims and adjustment expenses; and
- Net premium liabilities.

Other interest-rate-sensitive liabilities may include certain types of structured settlements. As per the OSFI guideline D5 Accounting for Structured Settlements, insurers may be required to recognize Type II structured settlement arrangements as an unpaid claim liability on the balance sheet (versus Type I structured settlements which have a disclosure-only requirement). The challenge to actuaries is that the value of the purchased annuities for Type II settlements will flow through the actuarial data as a single lump sum payment which could cause an understatement of the overall duration if not adjusted for. The additional challenge to actuaries is that embedded in the settlement structure value is the assumption of the prevailing interest rate (which is an input into the modified duration calculation). So, in the absence of the real future cash flows and the interest rate, the actuary may need to make a simplified yet reasonable assumption on the underlying payment pattern in order to reasonably approximate

the underlying future cash flows, and may want to consider using the valuation discount rate to complete the modified duration calculation.

P&C insurers may require supervisory approval in order to be able to consider other liabilities in the calculation of the interest rate risk margin.

Refer to appendix A (sheets 2–3) for an example of the duration calculations for unpaid claim liabilities, and to appendix A (sheet 4) for an example of the duration calculations for premium liabilities. Appendix A (sheet 5) shows how the durations calculated in sheets 3 and 4 may be carried into the calculation of the interest rate risk margin in P&C returns.

Refer to appendix B for an illustration of the cash flow matching model to derive the duration of the claim and premium liabilities.

Appendix C is similar to appendix A (sheet 4) except that it illustrates the duration calculation for premium liabilities on an all-lines-combined basis using the effective duration approach. The interest rate risk margin would be amended to reflect the appropriate fields from appendix C.

Duration of Interest-Rate-Sensitive Assets

Actuaries may be asked to calculate the duration of the interest-rate-sensitive assets in the insurer's portfolio, including for purposes of the calculation of the interest rate risk margin that is part of the MCT calculation. For most insurers, the main classes of interest-rate-sensitive assets are bonds and preferred shares. Refer to appendix A (sheet 1) for an illustrative duration calculation for fixed income securities.

Retractable preferred shares, and preferred shares with rate reset options, may lend themselves to the same duration calculation approach as bonds, particularly if a redemption date or rate reset date can be considered as equivalent to the maturity date of a bond.

As an alternative to the duration calculations referred to above, or to supplement the calculations for other classes of interest-rate-sensitive assets, actuaries may use estimates derived by the insurer's investment specialists. Before using the work of the investment specialist, the actuary would review the information for reasonableness, and identify which duration formula was used (i.e., Macaulay duration, modified duration, or effective duration) in order to ensure consistency between asset and liability durations.

Appendices

The examples in the appendices are provided to assist actuaries in calculating durations for the purpose of the interest rate risk margin in the P&C returns. They are intended to be illustrative, rather than prescriptive. Also included is an example of the use of those estimates in the calculation of the interest rate risk margin in accordance with the MCT Guideline (see appendix A, sheet 5).

Recognizing the link between concepts addressed in this educational note and those addressed in other recently issued educational notes, the appendices include exhibits taken from those other educational notes, as indicated below:

Exhibit	Description	Reference
Appendix A		
Sheet 1	Duration of bonds	2015 Year-end memo[1]
Sheets 2-3	Duration of unpaid claim liabilities	2015 Year-end memo[1]
Sheet 4	Duration of premium liabilities	N/A
Sheet 5	Interest Rate Risk Margin	2015 P&C return[2]
Appendix B	Net cash flow matching model	Discounting ed. note[3]
Appendix C	Duration of premium liabilities	Premium liabilities ed. note[4]

(1) Educational Note: 2015 Guidance to the Appointed Actuary for Property and Casualty Insurers (October 2015). Appendix B (Sheets 2-4)

(2) 2015 P&C Return – Page 30.66 – Capital (Margin) Required for Interest Rate Risk

(3) Revised Educational Note: Discounting and Cash Flow Considerations for Property and Casualty Insurers (May 2016). Appendix B (Sheet 4)

(4) Second Revision – Educational Note: Premium Liabilities (July 2016)

Appendix D, Sheet 1 is a deterministic approach to demonstrate that the duration of the net premium liabilities can be derived from the duration of a future accident year. Appendix D, Sheet 2 summarizes the results of testing performed by the PCFRC to assess the effect of various approximations of the Macaulay duration.

Duration of Bonds

Appendix A
Sheet 1

Year-end Information

Description	Bond #1	Bond #2	Bond #3
Valuation Date	2015/12/31	2015/12/31	2015/12/31
Maturity Date	2016/12/31	2017/06/30	2018/06/30
Coupon Rate	2.50%	6.60%	4.65%
Coupon # (k)	2	2	2
Par value	1,250.0	1,875.0	1,125.0
Market value	1,265.0	2,010.0	1,140.0
Semi-annual Coupon $	15.6	61.9	26.2
Yield (y) on a semi-annual basis	0.644%	0.859%	2.042%
Excel Yield (for comparison)	*0.644%*	*0.859%*	*2.042%*

Step 1: Future payment for assets

	Cash flows		
Year	Bond #1	Bond #2	Bond #3
2016.0	(1,265.0)	(2,010.0)	(1,140.0)
2016.5	15.6	61.9	26.2
2017.0	1,265.6	61.9	26.2
2017.5	-	1,936.9	26.2
2018.0	-	-	26.2
2018.5	-	-	1,151.2

Step 2: Calculation of duration for assets

Semi-annual (1 basis point) Δy = **0.01%**

	Annual (yrs) (1)	Semi-Annual Periods (2)	Cash Flows (3)	Present Value Factor (4)	Discounted Cash Flows (5)	PV Factor with -Δy (9)	PV Factor with +Δy (10)	Discounted Cash Flows with -Δy (11)	Discounted Cash Flows with +Δy (12)
Bond #1 yield:	0.64%								
	0.50	1	15.6	0.9936	15.5	0.9937	0.9935	15.5	15.5
	1.00	2	1,265.6	0.9872	1,249.5	0.9874	0.9870	1,249.7	1,249.2
	1.50	3	-	0.9809	-	0.9812	0.9806	-	-
	2.00	4	-	0.9746	-	0.9750	0.9743	-	-
	2.50	5	-	0.9684	-	0.9689	0.9679	-	-
	Total				1,265.0			1,265.2	1,264.8
(6) Macaulay duration	0.99386	1.98773				(13) Effective duration (semi-annual periods)			1.9750
(7) Modified duration	0.98750	1.97500				(14) Effective duration (annual basis)			0.98750
(8) Excel Duration (comparison):	*0.99386*								
Bond #2 yield:	0.86%								
	0.50	1	61.9	0.9915	61.3	0.9916	0.9914	61.4	61.3
	1.00	2	61.9	0.9830	60.8	0.9832	0.9829	60.8	60.8
	1.50	3	1,936.9	0.9747	1,887.8	0.9750	0.9744	1,888.4	1,887.3
	2.00	4	-	0.9664	-	0.9668	0.9660	-	-
	2.50	5	-	0.9582	-	0.9586	0.9577	-	-
	Total				2,010.0			2,010.6	2,009.4
(6) Macaulay duration	1.45435	2.9087				(13) Effective duration (semi-annual periods)			2.8839
(7) Modified duration	1.44197	2.8839				(14) Effective duration (annual basis)			1.44197
(8) Excel Duration (comparison):	*1.45435*								
Bond #3 yield:	2.04%								
	0.50	1	26.2	0.9800	25.6	0.9801	0.9799	25.6	25.6
	1.00	2	26.2	0.9604	25.1	0.9606	0.9602	25.1	25.1
	1.50	3	26.2	0.9412	24.6	0.9414	0.9409	24.6	24.6
	2.00	4	26.2	0.9223	24.1	0.9227	0.9220	24.1	24.1
	2.50	5	1,151.2	0.9039	1,040.5	0.9043	0.9034	1,041.0	1,040.0
	Total				1,140.0			1,140.5	1,139.5
(6) Macaulay duration	2.38980	4.7796				(13) Effective duration (semi-annual periods)			4.68397
(7) Modified duration	2.34198	4.6840				(14) Effective duration (annual basis)			2.34198
(8) Excel Duration (comparison):	*2.38980*								

Step 3: Market Value Weighted Duration of Assets

	Market Value	Modified Duration	Effective Duration
Bond #1	1,265.0	0.98750	0.98750
Bond #2	2,010.0	1.44197	1.44197
Bond #3	1,140.0	2.34198	2.34198
Total	**4,415.0**	**1.54415**	**1.54415**

(4) = 1 / (1 + y) ^ (2)
(5) = (3) x (4)
(6) Sumproduct of columns (2) and (5) divided by (5) Total; for annual basis divide by 2
(7) = (6) / (1 + y); for annual basis divide by 2
(8) DURATION (Valuation Date, Maturity Date, Coupon Rate, Annual Yield Rate, Coupon Frequency, basis)
(9) = 1 / (1 + y - Δy) ^ (2)
(10) = 1 / (1 + y + Δy) ^ (2)
(11) = (3) x (8)
(12) = (3) x (9)
(13) = [(11) total - (12) total] / [2 x Δy] / [(5) total]
(14) = (13) / 2

Duration of Unpaid Claim Liabilities

Appendix A
Sheet 2

Year-end Information

Unpaid as at December 31, 2015

Accident Year	Property	Liability
2011	-	32
2012	-	86
2013	-	127
2014	16	186
2015	137	258

Accident Year Payment Pattern

Age	Property	Liability
12	80%	35%
24	95%	68%
36	100%	80%
48	100%	85%
60	100%	90%
72	100%	95%
84	100%	99%
96	100%	100%

Yield (y)= **1.75%**
Annual Δy = **0.10%**

Unearned Premium Reserve for Property: 550
Unearned Premium Reserve for Liability: 380
Maintenance Expense Ratio (% UPR) = 3.50%
Maintenance Expenses should be paid during the time the UPR is being earned

Expected Loss Ratio for Property = 65.0%
Expected Loss Ratio for Liability = 80.0%

Step 1: Future payment for claims liabilities

Property

		Paid in						
Accident Year	Unpaid	2016	2017	2018	2019	2020	2021	2022
2011	-							
2012	-							
2013	-							
2014	16.0	16.0	-	-	-	-	-	
2015	137.0	102.8	34.3	-	-	-	-	-
Total	153.0	118.8	34.3	-	-	-	-	-

payout for AY 2015 @ 2016 = 137 / (1-80%) * (95% - 80%)
payout for AY 2015 @ 2017 = 137 / (1-80%) * (100% - 95%)
payout for AY 2014 @ 2016 = 16 / (1-95%) * (100% - 95%)

Liability

		Paid in						
Accident Year	Unpaid	2016	2017	2018	2019	2020	2021	2022
2011	32.0	16.0	12.8	3.2				
2012	86.0	28.7	28.7	22.9	5.7			
2013	127.0	31.8	31.8	31.8	25.4	6.4		
2014	186.0	69.8	29.1	29.1	29.1	23.3	5.8	
2015	258.0	131.0	47.6	19.8	19.8	19.8	15.9	4.0
Total	689.0	277.2	149.9	106.8	80.0	49.4	21.7	4.0

payout for AY 2015 @ 2016 = 258 / (1-35%) * (68% - 35%)
payout for AY 2015 @ 2017 = 258 / (1-35%) * (80% - 68%)
payout for AY 2014 @ 2016 = 186 / (1-68%) * (80% - 68%)
etc.

Duration of Unpaid Claim Liabilities

Appendix A
Sheet 3

Step 2: Calculation of duration for claims liabilities

Year (1)	Lag (yrs) (2)	Payment (3)	Present Value Factor (4)	Discounted Payment (5)	PV Factor with -Δy (8)	PV Factor with +Δy (9)	Discounted Cash Flows with -Δy (10)	Discounted Cash Flows with +Δy (11)
Property								
2016	0.5000	118.8	0.9914	117.7	0.9919	0.9909	117.8	117.7
2017	1.5000	34.3	0.9743	33.4	0.9758	0.9729	33.4	33.3
2018	2.5000	-	0.9576	-	0.9599	0.9552	-	-
2019	3.5000	-	0.9411	-	0.9443	0.9379	-	-
2020	4.5000	-	0.9249	-	0.9290	0.9208	-	-
2021	5.5000	-	0.9090	-	0.9139	0.9041	-	-
2022	6.5000	-	0.8934	-	0.8991	0.8877	-	-
Total				151.1			151.2	151.0
	0.7209	(6) Macaulay duration					(12) Effective duration	0.7085
	0.7085	(7) Modified duration						
Liability								
2016	0.5000	277.2	0.9914	274.8	0.9919	0.9909	274.9	274.6
2017	1.5000	149.9	0.9743	146.1	0.9758	0.9729	146.3	145.8
2018	2.5000	106.8	0.9576	102.3	0.9599	0.9552	102.5	102.0
2019	3.5000	80.0	0.9411	75.3	0.9443	0.9379	75.6	75.1
2020	4.5000	49.4	0.9249	45.7	0.9290	0.9208	45.9	45.5
2021	5.5000	21.7	0.9090	19.7	0.9139	0.9041	19.8	19.6
2022	6.5000	4.0	0.8934	3.5	0.8991	0.8877	3.6	3.5
Total				667.4			668.6	666.2
	1.8176	(6) Macaulay duration					(12) Effective duration	1.7863
	1.7863	(7) Modified duration						

Step 3: Weighted duration for claims liabilities

	PV of Unpaid Claims	PFAD	APV of Unpaid Claims	Modified Duration	Effective Duration
Property	151.1	5	156	0.7085	0.7085
Liability	667.4	115	782	1.7863	1.7863
Total	818.5	120	**938**	**1.6070**	**1.6070**

(3) From Appendix A, Sheet 2
(4) = 1 / (1 + y) ^ (2)
(5) = (3) x (4)
(6) Sumproduct of columns (2) and (5) divided by (5) Total
(7) = (6) / (1 + y)

(8) = 1 / (1 + y - Δy) ^ (2)
(9) = 1 / (1 + y + Δy) ^ (2)
(10) = (3) x (8)
(11) = (3) x (9)
(12) = [(10) total - (11) total] / [2 x Δy] / [(5) total]

Duration of Premium Liabilities

Appendix A
Sheet 4

Yield (y) = 1.75%
Annual Δy = 0.10%

Year (1)	Lag to Time Zero (yrs) (2)	AY Incremental Payment Pattern (3)	Present Value Factor (4)	Discounted to Time Zero (5)	PV Factor with -Δy (13)	PV Factor with +Δy (14)	Discounted with -Δy (15)	Discounted with +Δy (16)
Property								
2016	0.5000	80.0%	0.9914	79.31%	0.9919	0.9909	79.35%	79.27%
2017	1.5000	15.0%	0.9743	14.61%	0.9758	0.9729	14.64%	14.59%
2018	2.5000	5.0%	0.9576	4.79%	0.9599	0.9552	4.80%	4.78%
2019	3.5000	0.0%	0.9411	0.00%	0.9443	0.9379	0.00%	0.00%
2020	4.5000	0.0%	0.9249	0.00%	0.9290	0.9208	0.00%	0.00%
2021	5.5000	0.0%	0.9090	0.00%	0.9139	0.9041	0.00%	0.00%
2022	6.5000	0.0%	0.8934	0.00%	0.8991	0.8877	0.00%	0.00%
2023	7.5000	0.0%	0.8780	0.00%	0.8845	0.8715	0.00%	0.00%
Total				98.71%			98.78%	98.64%

0.7451	(6) Macaulay Duration			
0.7322	(7) Modified Duration			
0.5000	(8) Mean Accident Date of an AY		0.5000	0.5000
0.3333	(9) Mean Accident Date of UPR		0.3333	0.3333
0.9900	(10) Discount Factor at Time Zero of Prem Liab		0.9905	0.9894
0.5784	(11) Macaulay Duration	(17) Effective Duration:		0.5684
0.5684	(12) Modified Duration			

Year (1)	Lag to Time Zero (yrs) (2)	AY Incremental Payment Pattern (3)	Present Value Factor (4)	Discounted to Time Zero (5)	PV Factor with -Δy (13)	PV Factor with +Δy (14)	Discounted with -Δy (15)	Discounted with +Δy (16)
Liability								
2016	0.5000	35.0%	0.9914	34.7%	0.9919	0.9909	34.71%	34.68%
2017	1.5000	33.0%	0.9743	32.2%	0.9758	0.9729	32.20%	32.10%
2018	2.5000	12.0%	0.9576	11.5%	0.9599	0.9552	11.52%	11.46%
2019	3.5000	5.0%	0.9411	4.7%	0.9443	0.9379	4.72%	4.69%
2020	4.5000	5.0%	0.9249	4.6%	0.9290	0.9208	4.65%	4.60%
2021	5.5000	5.0%	0.9090	4.5%	0.9139	0.9041	4.57%	4.52%
2022	6.5000	4.0%	0.8934	3.6%	0.8991	0.8877	3.60%	3.55%
2023	7.5000	1.0%	0.8780	0.9%	0.8845	0.8715	0.88%	0.87%
Total				96.67%			96.85%	96.48%

1.9282	(6) Macaulay Duration			
1.8950	(7) Modified Duration			
0.5000	(8) Mean Accident Date of an AY		0.5000	0.5000
0.3333	(9) Mean Accident Date of UPR		0.3333	0.3333
0.9695	(10) Discount Factor at Time Zero of Prem Liab		0.9712	0.9678
1.7615	(11) Macaulay Duration	(17) Effective Duration:		1.7312
1.7312	(12) Modified Duration			

Year (1)	Lag to Time Zero (yrs) (2)	AY Incremental Payment Pattern (3)	Present Value Factor (4)	Discounted to Time Zero (5)	PV Factor with -Δy (13)	PV Factor with +Δy (14)	Discounted with -Δy (15)	Discounted with +Δy (16)
Maintenance Expenses								
2016	0.5000	100%	0.9914	99.1%	0.9919	0.9909	99.19%	99.09%
2017	1.5000	0%	0.9743	0.0%	0.9758	0.9729	0.00%	0.00%
Total				99.1%			99.19%	99.09%

0.5000	(6) Macaulay Duration			
0.4914	(7) Modified Duration			
0.5000	(8) Mean Accident Date of an AY		0.5000	0.5000
0.3333	(9) Mean Accident Date of UPR		0.3333	0.3333
0.9942	(10) Discount Factor at Time Zero of Prem Liab		0.9946	0.9939
0.3333	(11) Macaulay Duration	(17) Effective Duration:		0.3276
0.3276	(12) Modified Duration			

	UPR	ELR	Undiscounted Prem Liabilities	Discount Factor	PV of Prem Liabilities	Total PFAD	APV of Prem Liabilities	Modified Duration	Effective Duration
Property	550	65.0%	357.5	0.9900	353.9	12	365.9	0.5684	0.5684
Liability	380	80.0%	304.0	0.9695	294.7	51	345.7	1.7312	1.7312
Maintenance		3.50%	32.6	0.9942	32.4	-	32.4	0.3276	0.3276
Total	930		694.1		681.0	63	**744.0**	**1.0983**	**1.0983**

(2) Assume that all policies have 12-month terms with equal earning
(3) From Appendix A, Sheet 2
(4) [1 + y]^-(2)
(5) = (3) x (4)
(6) = Sumproduct of columns (2) and (5) divided by (5) total
(7) = (6) / [1 + y]
(8) Average accident date of a future accident year (July 1st)
(9) Mean average accident date of premium liabilities (May 1st).

(10) = (5) total x (1 + y)^ [(8) - (9)]
(11) = (6) - (8) + (9)
(12) = (11) / [1 + y]
(13) = [1 + y - Δy]^-(2)
(14) = [1 + y + Δy]^-(2)
(15) = (3) x (13)
(16) = (3) x (14)
(17) [Discount Factor with +Δy - Discount Factor with -Δy] / [2 x Δy] / (10)

30.66

2015

Date

MCT (BAAT) MARKET RISK CAPITAL (MARGIN) REQUIREMENTS
($'000)

Interest rate shock factor
0.01250 (0.01250)

Capital (Margin) Required for Interest Rate Risk					
(55)		**Fair value** (01)	**Modified or effective duration** (02)	**Dollar fair value change (01)x(02)xΔy** (03)	**Dollar fair value change (01)x(02)x(-Δy)** (04)
Interest rate sensitive assets:					
Term deposits	01			0	0
Bonds and debentures	02	4,415.0	1.5441	85	-85
Commercial paper	03			0	0
Loans	04			0	0
Mortgages	05			0	0
MBS and ABS	06			0	0
Preferred shares	07			0	0
Other (specify)	08			0	0
Total interest rate sensitive assets	**09**	4,415.0		85	-85
Interest rate sensitive liabilities:					
Net unpaid claims and adjustment expenses	10	938.5	1.6070	19	-19
Net premium liabilities	11	744.0	1.0983	10	-10
Other as approved by OSFI	12			0	0
Total interest rate sensitive liabilities	**19**	1,682.5		29	-29
Allowable interest rate derivatives:		**Notional value** (05)		**Dollar fair value Δy** (06)	**Dollar fair value - Δy** (07)
Long positions	20				
Short positions	21				
Total allowable interest rate derivatives	**29**			0	0
Capital required for Δy shock increase	30			56	
Capital required for Δy shock decrease	31				0
Total interest rate risk margin	**39**				56

Note: Δy = 1.25%

Row 02 from Appendix A, Sheet 1
Row 10 from Appendix A, Sheet 3
Row 11 from Appendix A, Sheet 4

ABC INSURANCE COMPANY

31 DECEMBER 2015

CASH FLOW MATCHING MODEL

Cash Flow (in $000's) for Determination of Discount Rate

Reinvestment Rate		1.000%
Internal Rate of Return (IRR) on Cash Flows:	IRR per Col (4)	2.153%
Estimated investment expense ratio		0.250%
Indicated discount rate net of expenses		1.903%

	Cash In-flow from Assets					Cash Outflow			Net Inflow (Excess)				Reinvested Funds			
(1) Year	(2) Cash from Investment Sheet 3	(3) (To)/ From Reinvestment See below	(4) Total Inflow = (2) + (3)	(4a) Payment of Net Claim Liabilities	(4b) Payment of Net Prem Liabilities	(5) Payment of Net Policy Liabilities Sheet 3	(6) Cash Withdrawal = (4) - (5)	(7) Total Outflow = (5) + (6)	(8) Net inflow No Reinv/WD = (2) - (5)	(9) Cumulative Excess Based on (8)	(10) Net inflow With Reinv/WD = (4) - (7)	(11) Cumulative Excess Based on (10)	(12) Opening Balance = (15) prior year	(13) Interest Earned on Reinv. =(12) * Reinv. Rate	(14) Deposit / (Withdrawal) = -(3)	(15) Closing Balance =(12) + (13)+ (14)
From Sheet 1	-349,985	0	-349,985	-275,865	-43,219			-349,985								
2016	140,960	-10,932	130,028	110,075	19,953	130,028	0	130,028	10,932	10,932	0	0	0	0	10,932	10,932
2017	87,733	-15,886	71,847	59,385	12,462	71,847	0	71,847	15,886	26,817	0	0	10,932	109	15,886	26,926
2018	54,773	-7,523	47,250	41,720	5,530	47,250	0	47,250	7,523	34,340	0	0	26,926	269	7,523	34,718
2019	2,648	27,826	30,473	27,400	3,073	30,473	0	30,473	-27,826	6,514	0	0	34,718	347	-27,826	7,240
2020	17,648	5,975	23,622	21,665	1,957	23,622	0	23,622	-5,975	540	0	0	7,240	72	-5,975	1,338
2021	32,033	-6,866	25,166	12,925	1,086	14,011	11,155	25,166	18,022	18,561	0	0	1,338	13	6,866	8,217
2022	893	8,299	9,191	8,715	476	9,191	0	9,191	-8,299	10,263	0	0	8,217	82	-8,299	1
2023	35,893	-3,391	32,502	4,875	273	5,148	27,354	32,502	30,745	41,007	0	0	1	0	3,391	3,392
2024	0	3,010	3,010	2,895	115	3,010	0	3,010	-3,010	37,997	0	0	3,392	34	-3,010	416
2025	0	400	400	345	55	400	0	400	-400	37,597	0	0	416	4	-400	20
2026	0	20	20	0	20	20	0	20	-20	37,577	0	0	20	0	-20	0
Total ex 2015	372,577	932	373,509	290,000	45,000	335,000	38,509	373,509	37,577		0					

Underlying Duration Calculation

IRR on Cash Flows (y):	2.257%	1.903%	1.903%
Payment Lag (EOP)	Disc Factor		
1	0.978	0.981	0.981
2	0.956	0.963	0.963
3	0.935	0.945	0.945
4	0.915	0.927	0.927
5	0.894	0.910	0.910
6	0.875	0.893	0.893
7	0.855	0.876	0.876
8	0.836	0.860	0.860
9	0.818	0.844	0.844
10	0.800	0.828	0.828
11	0.782	0.813	0.813
Macaulay Duration	2.747	2.617	2.122
Modified Duration	**2.687**	**2.568**	**2.082**

Notes

Cells in red are expansions to the educational note *Discounting and Cash Flow Considerations for P&C Insurers* .

(4a) See Revised Educational Note: Discounting and Cash Flow Considerations for P&C Insurers - Appendix B, Sheet 3, row 17.

(4b) See Revised Educational Note: Discounting and Cash Flow Considerations for P&C Insurers - Appendix B, Sheet 3, row 28.

(5) = (4a) + (4b)

ABC Insurance Company of Canada
Premium Liabilities Analysis
Net Basis
As of December 31, XXXX
(000s)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Class of Insurance	**Direct UPR**	**Assumed UPR**	**Gross UPR**	**Ceded UPR**	**Net UPR**	**Expected Reinsur. Premium**	**Selected Undisc. Loss Ratio (% Prem)**	**Losses + ALAE**	**Selected ULAE Ratio (% Loss + ALAE)**	**ULAE**	**Undisc. Losses + LAE**
Personal Property	10,000	0	10,000	500	9,500	500	86.0%	7,740	--	383	8,123
Commercial Property	0	0	0	0	0	0	0.0%	-	--	-	-
Aircraft	0	0	0	0	0	0	0.0%	-	--	-	-
Auto - Liability - Regular	50,000	0	50,000	1,000	49,000	3,000	98.0%	45,080	--	2,250	47,330
Auto - PA - Regular	25,000	0	25,000	3,000	22,000	1,500	115.0%	23,575	--	1,350	24,925
Auto - Other - Regular	30,000	0	30,000	500	29,500	1,000	67.0%	19,095	--	918	20,013
Auto - Liability - Facility	1,500	0	1,500	0	1,500	0	93.3%	1,400	--	-	1,400
Auto - PA - Facility	750	0	750	0	750	0	93.3%	700	--	-	700
Auto - Other - Facility	750	0	750	0	750	0	93.3%	700	--	-	700
Boiler & Machinery	0	0	0	0	0	0	0.0%	-	--	-	-
Credit	0	0	0	0	0	0	0.0%	-	--	-	-
Credit Protection	0	0	0	0	0	0	0.0%	-	--	-	-
Fidelity	0	0	0	0	(0)	0	0.0%	-	--	-	-
Hail	0	0	0	0	0	0	0.0%	-	--	-	-
Legal Expense	0	0	0	0	0	0	0.0%	-	--	-	-
Liability - Total	0	5,000	5,000	1,000	4,000	250	73.0%	2,738	--	169	2,906
Other Approved Products	0	0	0	0	0	0	0.0%	-	--	-	-
Surety - Total	0	0	0	0	0	0	0.0%	-	--	-	-
Title	0	0	0	0	0	0	0.0%	-	--	-	-
Marine	0	0	0	0	0	0	0.0%	-	--	-	-
Accident & Sickness	0	0	0	0	0	0	0.0%	-	--	-	-
Total	**118,000**	**5,000**	**123,000**	**6,000**	**117,000**	**6,250**	**91.8%**	**101,028**	**--**	**5,069**	**106,097**

(1) From Prem Liab Ed Note, appendix B, sheet 1, column (1)
(2) From Prem Liab Ed Note, appendix B, sheet 1, column (2)
(3) = (1) + (2)
(4) From company accounting department or annual return
(5) = (3) - (4)
(6) From company
(7) Similar calculation as gross analysis (see Prem Liab Ed Note)
(8) = [(5) - (6)]x (7)
(9) n/a
(10) Prem Liab Ed Note, appendix B, sheet 1, column (10)
(11) = (8) + (10)

ABC Insurance Company of Canada
Premium Liabilities Analysis
Net Basis
As of December 31, XXXX
(000s)

	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Class of Insurance	**Discount Factor**	**Discounted Losses + LAE**	**Discount Factor (with MfAD)**	**Discounted Losses + LAE (with Int. PfAD)**	**Interest Rate PfAD**	**Claims Dev't. MfAD**	**Claims Dev't. PfAD**	**Ceded Discounted Losses +ALAE**	**Reinsur. MfAD**	**Reinsur. PfAD**	**Total PfAD**	**Discounted Losses with PfADs**
Personal Property	0.983	7,984	0.987	8,015	31	7.0%	559	749	1.0%	7	597	8,581
Commercial Property	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Aircraft	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Auto - Liability - Regular	0.922	43,647	0.943	44,642	994	11.0%	4,801	4,277	1.0%	43	5,838	49,485
Auto - PA - Regular	0.932	23,234	0.953	23,758	524	10.0%	2,323	5,833	1.0%	58	2,906	26,140
Auto - Other - Regular	0.977	19,553	0.988	19,773	220	7.0%	1,369	1,275	1.0%	13	1,601	21,154
Auto - Liability - Facility	0.929	1,300	0.929	1,300	0	15.4%	200	0	1.0%	0	200	1,500
Auto - PA - Facility	0.929	650	0.929	650	0	15.4%	100	0	1.0%	0	100	750
Auto - Other - Facility	0.929	650	0.929	650	0	15.4%	100	0	1.0%	0	100	750
Boiler & Machinery	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Credit	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Credit Protection	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Fidelity	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Hail	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Legal Expense	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Liability - Total	0.937	2,724	0.953	2,771	47	10.0%	272	890	1.0%	9	328	3,052
Other Approved Products	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Surety - Total	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Title	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Marine	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Accident & Sickness	--	0	--	0	0	0.0%	0	0	1.0%	0	0	0
Total	**0.940**	**99,742**	**0.957**	**101,558**	**1,816**	**9.7%**	**9,725**	**13,024**	**1.0%**	**130**	**11,671**	**111,413**

(12) Similar calculation as gross analysis (see Prem Liab Ed Note)
(13) = (11) x (12)
(14) Similar calculation as gross analysis (see Prem Liab Ed Note)
(15) = (11) x (14)
(16) = (15) - (13)
(17) Claims development MfAD used for the valuation of claims liabilities
(18) = (13) x (17)
(19) See Prem Liab Ed Note, Appendix C, Sheet 2
(20) Reinsurance MfAD used for the valuation of claims liabilities
(21) = (19) x (20)
(22) = (16) + (18) + (21) [input for P&C annual return Page 30.64, Col (14)]
(23) = (13) + (22)

ABC Insurance Company of Canada
Premium Liabilities Analysis
Net Basis
As of December 31, XXXX
(000s)

	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
Class of Insurance	**Maint. Expense Ratio (% Gross Prem.)**	**Maint. Expenses**	**Contingent Comm. Rate (% Gross Prem.)**	**Contingent Comm.**	**Premium Liabilities**	**Unearned (Ceded) Comm.**	**Equity in UPR**	**Max. Allowable DPAE**	**Initial DPAE**	**Booked DPAE**	**Premium Deficiency**
Personal Property	3.00%	300	0.00%	0	9,381	129					
Commercial Property	3.00%	0	0.00%	0	0	0					
Aircraft	3.00%	0	0.00%	0	0	0					
Auto - Liability - Regular	3.00%	1,500	0.00%	0	53,985	258					
Auto - PA - Regular	3.00%	750	0.00%	0	28,390	774					
Auto - Other - Regular	3.00%	900	0.00%	0	23,054	129					
Auto - Liability - Facility	3.00%	45	0.00%	0	1,545	0					
Auto - PA - Facility	3.00%	23	0.00%	0	773	0					
Auto - Other - Facility	3.00%	23	0.00%	0	773	0					
Boiler & Machinery	3.00%	0	0.00%	0	0	0					
Credit	3.00%	0	0.00%	0	0	0					
Credit Protection	3.00%	0	0.00%	0	0	0					
Fidelity	3.00%	0	0.00%	0	0	0					
Hail	3.00%	0	0.00%	0	0	0					
Legal Expense	3.00%	0	0.00%	0	0	0					
Liability - Total	3.00%	150	0.00%	0	3,452	258					
Other Approved Products	3.00%	0	0.00%	0	0	0					
Surety - Total	3.00%	0	0.00%	0	0	0					
Title	3.00%	0	0.00%	0	0	0					
Marine	3.00%	0	0.00%	0	0	0					
Accident & Sickness	3.00%	0	0.00%	0	0	0					
Total	**3.00%**	**3,690**	**0.00%**	**0**	**121,353**	**1,549**	**(2,804)**	**0**	**20,000**	**0**	**2,804**

(24) From Prem Liab Ed Note, appendix B, sheet 6, row (10)
(25) = (3) x (24)
(26) Based on company budget and projected loss ratios
(27) = (3) x (26)
(28) = (6) + (23) + (25) + (27)
(29) From company accounting department or annual return
(30) = (5) - (28) + (29)

(31) = max [(30) , 0]
(32) From company accounting department
(33) = min [(31) , (32)] [input for P&C return 20.10, row(43)]
(34) = - min [(30) , 0] [input for P&C return 20.20, row (15)]

ABC Insurance Company of Canada
Premium Liabilities Analysis
Net Basis
As of December 31, XXXX
(000s)

	(35)	(36)	(37)
Class of Insurance	**Premium Liabilities Δy= +0.1%**	**Premium Liabilities Δy= -0.1%**	**Premium Liabilities Effective Duration**
Personal Property			
Commercial Property			
Aircraft			
Auto - Liability - Regular			
Auto - PA - Regular			
Auto - Other - Regular			
Auto - Liability - Facility			
Auto - PA - Facility			
Auto - Other - Facility			
Boiler & Machinery			
Credit			
Credit Protection			
Fidelity			
Hail			
Legal Expense			
Liability - Total			
Other Approved Products			
Surety - Total			
Title			
Marine			
Accident & Sickness			
Total	**120,997**	**121,920**	**3.803**

(35) = recalculation of (28) using discount rate + 0.1%
(36) = recalculation of (28) using discount rate - 0.1%
(37) = [(36)-(35)] / [2 x 0.1%] / (28)

Premium Liabilities Macaulay Duration

The following is a deterministic approach to demonstrate that the duration of the net premium liabilities can be derived from the duration of a future accident year.

Assume the following:

- i = yield-to-maturity discount rate.
- Assume losses are uniformly distributed and premiums are annual and evenly distributed.
- Let t = timing of payments of a future accident year (0.5/1.5/2.5/etc.) from the valuation or calculation date. For simplification, assume there is only one payment made each year and that the first payment is made at the average accident date.
- P_t is your cash flow payment at time t.
- Let x = difference between the mean accident date of a future accident year and the mean accident date underlying the unearned premium reserve = 1/6 (0.50 less 0.333).

$$Macaulay\ Duration_{AY} = \frac{\sum_t tP_t(1+i)^{-t}}{\sum_t P_t(1+i)^{-t}}$$

$$Duration_{NPL} \approx \frac{\sum_t (t-x)P_t(1+i)^{-(t-x)}}{\sum_t P_t(1+i)^{-(t-x)}} = \frac{(1+i)^x \sum_t tP_t(1+i)^{-t} - x(1+i)^x \sum_t P_t(1+i)^{-t}}{(1+i)^x \sum_t P_t(1+i)^{-t}}$$

$$\approx Macaulay\ Duration_{AY} - x$$

- Modified duration can then be calculated by dividing by (1+i).

The following table summarizes the results from the monthly testing of the duration of the premium liabilities performed by the Sub-committee on Premium Liabilities Ed Note Revisions of the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) against the following:

1. Previous CIA interpolation approach with the median average accident date;
2. Previous CIA interpolation approach with the mean average accident date;
3. New approximation using the duration of a future accident year minus an adjustment for accident dates using the mean (.3333); and
4. New approximation using the duration of a future accident year minus an adjustment for accident dates using the median (.2929).

Summary of Results - Difference versus exact monthly calculation

		Macaulay Duration of the Premium Liabilities			
		YE 2014 CIA approx using interpolation w/ median AAD	YE 2014 CIA approx using interpolation w/ mean AAD	New Approx assuming w/ mean AAD	New Approx w/ median AAD
yield rate	20.00%				
	Stable Pattern	-10.3%	-7.1%	-0.8%	-2.5%
	Decreasing Pattern	-13.0%	-8.7%	-1.1%	-3.5%
	Long Tail	-11.1%	-7.8%	-0.8%	-2.4%
	Short Tail	-15.4%	-5.2%	-0.8%	-9.8%
yield rate	10.00%				
	Stable Pattern	-9.2%	-6.2%	-0.4%	-2.0%
	Decreasing Pattern	-11.8%	-7.8%	-0.6%	-2.8%
	Long Tail	-10.0%	-6.8%	-0.4%	-2.0%
	Short Tail	-15.2%	-5.1%	-0.5%	-9.4%
yield rate	3.50%				
	Stable Pattern	-8.5%	-5.6%	-0.1%	-1.7%
	Decreasing Pattern	-11.0%	-7.1%	-0.2%	-2.4%
	Long Tail	-9.2%	-6.2%	-0.1%	-1.7%
	Short Tail	-15.0%	-5.0%	-0.2%	-9.0%
yield rate	0.00%				
	Stable Pattern	-8.1%	-5.3%	0.0%	-1.5%
	Decreasing Pattern	-10.5%	-6.7%	0.0%	-2.1%
	Long Tail	-8.8%	-5.8%	0.0%	-1.5%
	Short Tail	-14.9%	-4.9%	0.0%	-8.7%

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Minor Amendment to Educational Note

Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice

Committee on Property and Casualty Insurance Financial Reporting

June 2011

Document 211064

Ce document est disponible en français

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members in the P&C insurance area.

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Memorandum

To: All Fellows, Associates, Affiliates and Correspondents of the Canadian Institute of Actuaries

From: Tyrone G. Faulds, Chair
Practice Council

Pierre Dionne, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: June 9, 2011

Subject: **Minor Amendment to Educational Note: Evaluation of the Runoff of P&C Claim Liabilities when the Liabilities are Discounted in Accordance with Accepted Actuarial Practice**

The Committee on Property and Casualty Insurance Financial Reporting has revised the attached Educational Note. The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare an evaluation of the runoff of the claim liabilities when claim liabilities are discounted.

In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on June 9, 2011.

As outlined in subsection 1220 of the Standards of Practice, *"The actuary should be familiar with relevant Educational Notes and other designated educational material."* That subsection explains further that a "practice which the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the Standards, so there should be no conflict between them."

Additional guidance on discounting is available in Educational Note 210079 – Discounting, published by the CIA in November 2010.

If you have any questions or comments regarding this educational note, please contact Pierre Dionne at his CIA Online Directory address, pdionne@ccr.fr.

TGF, PD

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INTRODUCTION

The primary purpose of this document is to provide guidance to property and casualty (P&C) actuaries who are required to prepare a comprehensive report on the valuation of the policy liabilities and an evaluation of the runoff of the claim liabilities.

When claim liabilities are derived on an undiscounted basis, the most common means used by actuaries to evaluate the runoff is through a comparison of the estimated ultimate incurred amounts at successive valuation dates. Another common approach is to compute the calendar year runoff as the amounts paid during the calendar year, plus the change in outstanding amounts from the prior valuation, which is consistent with the calculation of the calendar year incurred claims in the insurer's income statement. These approaches must be modified or replaced in order to properly evaluate the runoff when the claim liabilities are derived on a discounted basis, in accordance with accepted actuarial practice.

The guidance provided in this note may be appropriate for the valuation of the runoff of other liabilities, including self-insured retention.

This document is divided into three sections:

discussion of the basic approaches to the evaluation of runoff of claim liabilities,

an accident year runoff model, and

allocation of investment income between liabilities and surplus.

1. BASIC APPROACHES TO THE EVALUATION OF RUNOFF OF CLAIM LIABILITIES

1.1 Undiscounted Basis

The runoff, or calendar year emergence, is generally computed in one of two ways, both of which should produce the same result.

(a) Emergence in t with respect to accident years $t-1$ and prior

= (Ultimate amounts estimated at $t-1$) – (ultimate amounts estimated at t)

This calculation can also be done on a policy year or underwriting year basis, except that the second term must be adjusted to exclude the portion of policy year $t-1$ that is earned in calendar year t.

(b) Emergence in t with respect to accident years $t-1$ and prior

= (Claim liabilities at $t-1$) – (Paid during t) – (Claim liabilities at t)

This calculation can also be done on a policy year or underwriting year basis, except that the second and third terms must be adjusted to exclude the portion of policy year $t-1$ that is earned in calendar year t.

The choice of (a) or (b) depends on the available data, regulatory or management requirements, if any, and the actuary's preference.

1.2 Discounted Basis

Equation (a) above, or the comparison of the estimated ultimate incurred amounts, may provide useful information regarding the discounted claim liabilities, but this approach is not readily

adjusted to encompass the effect of the time value of money, and the provision for adverse deviations.

Equation (b) in item 1.1 above would be modified by

discounting the amounts in the second and third terms to time *t-1* (i.e., calculate the present value of the cash flows); or

subtracting a term for the portion of the investment income earned during calendar year *t* on assets supporting the liabilities.

These adjustments should produce equivalent results but the second approach is simpler, both in terms of the calculations and the presentation. The models presented in sections 2 and 3 of this document are based on the second approach.

For the purposes of the Appointed Actuary's report, it would be useful to identify the components of the runoff (i.e., the contribution of the undiscounted claim liabilities, changes in the discount rate, and changes in the provision for adverse deviations).

2. ACCIDENT YEAR RUNOFF MODEL

The model is best illustrated through a simple calendar year (CY) example, as shown below.

EXCESS (DEFICIENCY) DURING CY 6 – BY ACCIDENT YEAR					
Accident Year	**Paid Losses During CY 6** **(1)**	**Discounted Claim Liabilities 31/Dec/6** **(2)**	**Discounted Claim Liabilities 31/Dec/5** **(3)**	**Investment Income in CY 6 On Unpaid Claims** **(4)**	**Excess (Deficiency) During 6** **(5)**
1	2,000	3,000	6,000	270	1,270
2	3,000	7,000	12,000	570	2,570
3	4,000	10,000	17,000	810	3,810
4	6,000	19,000	26,000	1,350	2,350
5	16,000	29,000	44,000	2,190	1,190
Subtotal	**31,000**	**68,000**	**105,000**	**5,190**	**11,190**
6	40,000	44,000	-	1,320	
Total	**71,000**	**112,000**	**105,000**	**6,510**	

(Amounts in $000s)

(1) From exhibit—table 1.

(2) From exhibit—table 2.

(3) From exhibit—table 2.

(4) From exhibit—table 2 = average lines CY 5 and CY 6 for each accident year x annual yield.

In this example, for accident year 5, the average outstanding claims was (29,000 + 44,000)/2 or 36,500. In the example, the annual yield was 6%. So, 6% x 36,500 = 2,190. (Results presented in table 3.)

(5) From exhibit—table 4: line CY 6 [(3) + (4)] – [(1) + (2)].

Section 3 of this document addresses the methodology and assumptions underlying the allocation of the investment income in column (4) above.

The model may be expanded to monitor the runoff over a period of time as shown in tables 5 and 6.

3. ALLOCATION OF INVESTMENT INCOME BETWEEN LIABILITIES AND SURPLUS

The investment income attributable to policy liabilities should be determined. If the assets are allocated (e.g., surplus vs. operations), then the runoff would be calculated consistent with that allocation. The basis for allocation would be consistent with the investment policy of the company and the basis used by the actuary in discounting the policy liabilities. The basis for allocation would be properly documented. In a situation where there is no formal allocation, the default yield rate would be based on the same calculation as used in the P&C-1 or P&C-2 exhibit 10.60. The actuary is referred to the Educational Note on Discounting (Document 210079—November 2010) for guidance on different approaches to select a discounting rate.

The investment income attributable to policy liabilities can be obtained by

multiplying the selected yield rate by

the average of the starting and ending values of

+ net unpaid claims
+ net unearned premium
– gross DPAC
+ premium deficiency provisions
+ unearned commissions
– agents, brokers and policyholders receivables
– instalment premiums.

If the default yield rate is used for the allocation, then the investment income attributable to policy liabilities would be compared to the overall investment income. If necessary, the investment income on policy liabilities (using the total investment income as a cap) would be reduced and the yield for runoff purposes would be recalculated. This will happen if the invested assets are less than the policy liabilities less the respective receivables. If the overall investment income is negative, then the resulting negative yield should be used for runoff purposes, i.e., the runoff is penalized, again subject to cap, i.e., the negative investment income on policy liabilities would be capped per the overall negative investment income.

A simple approach to calculate the investment income attributable to assets backing the net unpaid claims is to multiply the investment yield by the mean net claim liabilities.

If necessary, the calculation of the investment income attributable to assets backing the net premium liabilities can be performed in a similar manner. The investable assets are considered to be equal to the net unearned premium plus the premium deficiency provisions and unearned

commissions, reduced by gross DPAC, agents, brokers and policyholders' receivables and instalment premiums.

EXHIBITS

Table 1—Paid Losses During the Calendar Year (CY)							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1	42,000						42,000
2	18,000	43,000					61,000
3	10,000	16,000	44,000				70,000
4	4,000	8,000	12,000	40,000			64,000
5	3,000	5,000	9,000	15,000	39,000		71,000
6	2,000	3,000	4,000	6,000	16,000	40,000	71,000

Table 2—Discounted Claim Liabilities								
	Accident Year							
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**	**Annual Yield**
1	48,000						48,000	7.50%
2	29,000	47,000					76,000	7.00%
3	18,000	29,000	43,000				90,000	6.50%
4	11,000	19,000	29,000	42,000			101,000	6.50%
5	6,000	12,000	17,000	26,000	44,000		105,000	6.00%
6	3,000	7,000	10,000	19,000	29,000	44,000	112,000	6.00%

Table 3—Investment Income on Unpaid Claims							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1	1,800						1,800
2	2,695	1,645					4,350
3	1,528	2,470	1,398				5,400
4	943	1,560	2,340	1,365			6,210
5	510	930	1,380	2,040	1,320		6,180
6	270	570	810	1,350	2,190	1,320	6,510

Table 4—Excess (Deficiency)							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							—
2	3,700						3,700
3	2,530	4,470					7,000
4	3,940	3,560	4,340				11,840
5	2,510	2,930	4,380	3,040			12,860
6	1,270	2,570	3,810	2,350	1,190		11,190

Table 5—Cumulative Excess							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							
2	3,695						
3	6,223	4,470					
4	10,165	8,030	4,340				
5	12,675	10,960	8,720	3,040			
6	13,945	13,530	12,530	5,390	1,190		

Table 6—Cumulative % Excess Ratio							
	Accident Year						
As of CY	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1							
2	7.70%						
3	12.96%	9.51%					
4	21.18%	17.09%	10.09%				
5	26.41%	23.32%	20.28%	7.24%			
6	29.05%	28.79%	29.14%	12.83%	2.70%		

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Educational Note

Margins for Adverse Deviations for Property and Casualty Insurance

Committee on Property and Casualty Insurance Financial Reporting

December 2009

Document 209138

Ce document est disponible en français

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Members should be familiar with Educational Notes. Educational Notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the member in the property and casualty insurance practice area.

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Memorandum

To: Members in the Property and Casualty Insurance Practice Area

From: Tyrone G. Faulds, Chairperson
Practice Council

Kevin A. Lee, Chairperson
Committee on Property and Casualty Insurance Financial Reporting

Date: December 23, 2009

Subject: **Educational Note: Margins for Adverse Deviations for P&C Insurance**

In accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on December 23, 2009.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material*." That subsection explains further that a "practice which the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the Standards, so there should be no conflict between them."

If you have any questions or comments regarding this educational note, please contact Kevin A. Lee at his CIA Online Directory address, kevin.lee@iao.aon.ca.

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1. INTRODUCTION

Purpose

The purpose of this educational note is to provide guidance to actuaries in the selection of margins for adverse deviations for property and casualty (P&C) insurers. This educational note also provides useful guidance for an actuary conducting a valuation of policy liabilities (i.e., claim and premium liabilities) for an enterprise that is not an insurer but whose operations include benefits that an insurer may provide (e.g., self-insurers and captive insurers).

A margin for adverse deviations reflects the degree of uncertainty of the best estimate assumption. The Standards of Practice (paragraph 1740.42) state that

> "Deviation of actual from expected experience may result from one or more of the following:
>
> > error of estimation, which may be favourable or adverse. Except in the simplest cases, it is not possible to determine expected experience with complete confidence. Past experience data may be insufficient or unreliable. Future conditions may differ from the conditions that generated the past experience.
> >
> > deterioration or improvement of the expected experience as a result of influences which the actuary does not anticipate.
> >
> > statistical fluctuation, which also may be favourable or adverse."

This educational note is meant to be sufficiently flexible to allow for future developments in this rapidly evolving field, particularly in light of International Financial Reporting Standards (IFRS) and the increasing use of stochastic techniques in the valuation of policy liabilities. Actuaries may derive margins for adverse deviations using an explicit approach for deterministic analyses of policy liabilities or using stochastic techniques. For deterministic analysis, the range of acceptable margins is set out in subsection 2260 of the Standards of Practice. For stochastic analyses, there is no specific statistical measurement or percentile mandated by the Standards of Practice for P&C insurance (Standards of Practice, subsection 2270). This differs from the Standards of Practice for life insurance which mandate the use of a conditional tail expectation (CTE) approach between CTE(60%) to CTE(80%). However, as presented later in this educational note (sections 8 and 9), some examples prepared by the Risk Margin Working Group (RMWG) of the International Actuarial Association (IAA), show that a range of CTE(60%) to CTE(80%) may be too high for many traditional P&C lines of insurance.

Actuaries are reminded that the purpose of margins for adverse deviations in an analysis of policy liabilities is to reflect the degree of uncertainty of the best estimate assumptions. Thus, the margins for adverse deviations are not expected to be so high that the probability of an unfavourable development is less than 1% or 5% (i.e., scenarios under dynamic capital adequacy testing).

Cost of Capital Methods

The focus of this educational note is on margins for adverse deviations that are derived either from deterministic or stochastic analyses. Some actuaries have recently suggested using a cost of capital approach as a further approach to determining margins for adverse deviations. This educational note, however, does not address a cost of capital method. While the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) believes that costs of capital methods are an important area of future development for P&C actuaries, many unresolved issues surround the use of such methods. For example, actuaries are still grappling with the issue of the

basis to be used for the determination of capital. Options for capital include economic capital, regulatory required capital, rating agency capital, capital used for pricing, and other bases. Similarly, challenges remain to determine the cost basis, including how frequently the cost should be updated and whether it should vary by contract or claim type or by duration of contract or claim. Details regarding cost of capital methods and risk margins can be found in the April 15, 2009 report, Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins, prepared by the Risk Margin Working Group (RMWG) of the International Actuarial Association (IAA).[1]

Topics for Future Research

Throughout this educational note, reference is made to the evolving environment within the actuarial community with respect to risk margins. There is continuing development in the area of stochastic valuation and statistical modeling techniques and capital requirements. International Financial Reporting Standards Phase II will have an important influence on risk margins. It is recognized that this educational note is unable to address all issues related to margins for adverse deviations. Two important areas that are not addressed are correlation and diversification. Nevertheless, both have a potential role to play in the development and assessment of margins for adverse deviations.

For the topic of correlation, we refer the reader to section 6.5 of the CIA's August 2001 Research Paper, Use of Stochastic Techniques to Value Actuarial Liabilities under Canadian GAAP, prepared by the Working Group on the use of Stochastic Techniques (Working Group) of the Committee on Life Insurance Financial Reporting. It is recognized, however, that further guidance on the topic of correlation specific to the valuation of P&C insurance liabilities and the determination of provisions for adverse deviations would be valuable for P&C actuaries. As well, the sensitive topic of diversification has potential regulatory implications.

Finally, there continues to be some confusion with respect to the role of process risk and the extent to which it should be recognized in the determination of margins for adverse deviations. Thought leadership and guidance on all these topics would be valuable to P&C actuaries.

Organization of Educational Note

This educational note includes eleven sections.

1. Introduction
2. Terminology
3. Desirable risk margin characteristics
4. Three categories of margins for adverse deviations
5. Explicit assumptions - margins for adverse deviations using a deterministic analysis
6. Relevant statistical concepts
7. Stochastic techniques
8. Three P&C product examples

[1] Copyright 2009 by the International Actuarial Association (IAA). Electronic or hard copies of the report are available for sale by the IAA. (See https://www.actuaries.org/ORDER_FORM2_EN.cfm for more information.)

9. Quantile approaches
10. Comparison of risk margin methods
11. Documentation and reporting

Information Sources

In preparing this educational note, the PCFRC has relied extensively on the April 15, 2009 report, Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins, prepared by the RMWG of the IAA. Throughout the educational note, this IAA report is referred to as the "IAA Risk Margin Report." The PCFRC has also relied on the feedback received from numerous CIA members in response to the June 5, 2009 notice of intent to revise Subsection 2250 Margin for Adverse Deviations of the Practice-Specific Standards for Insurers (P&C Insurance). These comments are interspersed throughout the educational note.

2. TERMINOLOGY

The Standards of Practice define the margin for adverse deviations as the difference between the assumption for a calculation and the corresponding best estimate assumption. The provision for adverse deviations is the difference between the actual result of a calculation and the corresponding result using best estimate assumptions. Outside of the context of the Standards of Practice, the provision for adverse deviations is commonly referred to as "risk margin".

Paragraph 1740.40 of the Standards of Practice states that

> "A margin for adverse deviations may be expressed as one of
>
> the difference between the assumption used for the valuation and the best estimate assumption. For example, if the actuary expects the interest rate to be 10% and assumes 8%, then the margin for adverse deviations is 2%. The provision for adverse deviations is the dollar amount of increase that results from a margin for adverse deviations. For example, if that 2% margin for adverse deviations in the interest rate assumption increase liabilities from $100 million to $120 million, then the provision for adverse deviations is $20 million [or the dollar amount of increase that results from the application of the margin for adverse deviations].
>
> a multiplier to the liabilities without provision for adverse deviations. For example, if the actuary sets claim liabilities equal to 1.1 x expected claim liabilities, then the margin for adverse deviations factor is 10% and the provision for adverse deviations is 0.1 x expected claim liabilities.
>
> an addition to the liabilities without provision for adverse deviations, determined through scenario testing.

3. DESIRABLE RISK MARGIN CHARACTERISTICS

In its Second Liabilities Paper (2006, paragraph 57), the International Association of Insurance Supervisors (IAIS) addresses the issue of risk margins. The IAIS takes the position that "without prescribing any one method at this stage, the IAIS believes that any methodology for calculating the risk margin should share certain characteristics." The paper continues,

> …Irrespective of the particular methodology used, an appropriate method…should reflect the inherent uncertainty in the expected future cash flows and would be expected to exhibit the following characteristics:

a. The less that is known about the current estimate and its trend; the higher should be the risk margins

b. Risks with low frequency and high severity should have higher risk margins than risks with high frequency and low severity

c. For similar risks, contracts that persist over a longer timeframe should have higher risk margins than those of shorter duration

d. Risks with a wide probability distribution should have higher risk margins than those risks with a narrower distribution

e. To the extent that emerging experience reduces uncertainty, risk margins should decrease, and vice versa.

The International Accounting Standards Board (IASB) identified the same properties as being desirable (IASB Discussion Paper, 2007, Part 2: Appendix F, pages 34-35).

The IAA Risk Margin Report states that

"A risk margin methodology should[2]:

1. Apply a consistent methodology for the entire lifetime of the contract;
2. Use assumptions consistent with those used in the determination of the corresponding current estimates;
3. Be determined in a manner consistent with sound insurance pricing practices;
4. Vary by product (class of business) based on risk differences between the products;
5. Be easy to calculate;
6. Be consistently determined between reporting periods for each entity that is, the risk margin varies from period to period only to the extent that there are real changes in risk;
7. Be consistently determined between entities at each reporting date, that is, two entities with similar business should produce similar risk margins using the methodology;
8. Facilitate disclosure of information useful to stakeholders;
9. Provide information that is useful to users of financial statements;
10. Be consistent with regulatory solvency and other objectives; and
11. Be consistent with IASB objectives."

The characteristics cited by both the IAIS and the IAA are consistent with the characteristics noted in the actuarial Standards of Practice. According to paragraphs 1740.43 and 1740.44 of the Standards of Practice,

[2] The RMWG of the IAA notes that some of the characteristics are taken from a Groupe Consultatif study of risk margin methods: 2007, Solvency II Risk Margin Comparison, February 2006, http://www.gcactuaries.org/documents/ceiops_rmcomparison_130206.pdf.

1740.43 "A larger margin for adverse deviations (compared to the best estimate assumption) is appropriate if

the actuary has less confidence in the best estimate assumption,

an approximation with less precision is being used,

the event assumed is farther in the future,

the potential consequence of the event assumed is more severe, or

the occurrence of the event assumed is more subject to statistical fluctuation."

1740.44 "A smaller margin for adverse deviations is appropriate if the opposite is true."

4. THREE CATEGORIES OF MARGINS FOR ADVERSE DEVIATIONS

For P&C insurance, the Standards of Practice set three categories of margins for adverse deviations,

claims development – the margin for claims development is a percentage of the claim liabilities excluding provision for adverse deviations.

recovery from reinsurance ceded – the margin for recovery from reinsurance ceded is a percentage of the amount deducted on account of reinsurance ceded in calculating the premium liabilities or the claim liabilities, excluding provision for adverse deviations.

investment return rates – the margin for investment return rate is a deduction from the expected investment return rate per year.

The Standards of Practice note that, according to how considerations so vary, the selected margins should vary between premium liabilities and claim liabilities, among lines of business, and among accident years, policy years, or underwriting years, as the case may be.

5. EXPLICIT ASSUMPTIONS – MARGINS FOR ADVERSE DEVIATIONS USING A DETERMINISTIC ANALYSIS

Subsection 2260 of the Standards of Practice applies to the selection of a margin for adverse deviations in a deterministic analysis. Specific levels of margins are set out for each of the three categories.

Category	Low Margin	High Margin
Claims development	2.5%	20%
Recovery from reinsurance ceded	Zero	15%
Investment return rates	25 basis points	200 basis points

The IAA Risk Margin Report refers to this Canadian approach to determining risk margins as "explicit assumptions."

Paragraphs 2260.01 and 2260.03 of the Standards of Practice state

2260.01 "*The actuary should select a margin for adverse deviations for an assumption that is at least as much as the amount defined by the low margin for adverse deviations and is not excessive*."

2260.03 "Usually, a selection above the high margin for adverse deviations would be considered excessive."

It is important to recognize that paragraph 2260.04 of the Standards of Practice specifically notes that there may be circumstances in which the selection of a margin for adverse deviations above the high margin would be appropriate "for unusually high uncertainty or when the resulting provision for adverse deviations is unreasonably low because the margin for adverse deviations is expressed as a percentage and the best estimate is unusually low."

Margin for Claim Development

The following pages present numerous examples of considerations for the actuary when selecting a margin for adverse deviations. These considerations should not be viewed as an exhaustive list of all considerations, but rather as representative of key issues that the actuary would consider when selecting margins for each of the three categories. In some circumstances, the listed consideration may not be relevant or applicable. An actuary would often derive unique considerations specific to the organization for which he or she works.

For each consideration, there is a spectrum between the situation necessitating a low margin or a high margin. For many insurers, the particular circumstances for any one consideration may dictate the selection of a margin between the low and high values set out in the Standards of Practice. When an actuary is faced with a situation in which some considerations indicate a low margin and others indicate a high margin, the actuary would use professional judgment to determine the priority of considerations and the resulting final margin.

For the claims development margin, considerations are related to

insurer's operations (claims management, underwriting, and other),

data on which the estimate is based, and

line of business.

TABLE 5.1 Claims Development		
Considerations Related to Operations – Claims Management		
	Low Margin Situation	**High Margin Situation**
Systems affecting claims handling procedures	stable and consistent	significant changes in coding procedures, kind of loss codes, claims processing system, other
Claims management - leadership - personnel	stable and strong	lack of consistent leadership, high turnover of personnel
Adequacy of staffing	stable and adequate, consistent use of internal and external adjusters	inadequate staffing, shift from internal to external adjusters (or vice-versa)
Guidelines for claims handling	specific and consistent guidelines	absence of guidelines, significant changes
Procedures for/philosophy regarding: - opening claims - minor claims - major claims - defending claims - closing claims - claims expenses	specific and consistent guidelines	absence of guidelines, significant changes
Procedures for establishing case outstanding	specific and consistent guidelines	absence of guidelines, significant changes
Relative adequacy of case outstanding	stable and consistent	significant changes

Considerations Related to Operations – Underwriting		
	Low Margin Situation	**High Margin Situation**
Systems affecting underwriting	stable and consistent	significant changes
Underwriting: - leadership - personnel	stable and strong	lack of consistent leadership, high turnover of personnel
Adequacy of staffing	stable and adequate	inadequate staffing
Guidelines for underwriting	specific and consistent guidelines	absence of guidelines, significant changes

Considerations Related to Operations – Other		
	Low Margin Situation	**High Margin Situation**
Technology and processing systems	stable and consistent	significant changes
Internal controls	specific and consistent controls	absence of controls, significant changes
Accounting systems	stable and consistent	significant changes

Considerations Related to the Data on which the Estimate is Based		
	Low Margin Situation	**High Margin Situation**
Volume of losses and premiums in each period	stable, high volume	volume changes significantly from period to period
Homogeneity in data grouping	significant homogeneity	limited homogeneity
New exposure	credible historical experience available	absence of credible historical experience
For reinsurers: - relationships with ceding companies - types of treaties - attachment points - limits	stable	high turnover or significant changes
History of credible loss development experience	available	unavailable or limited
Mix of business	stable	significant changes
Stability of historical loss development experience	high	low
Potential influence of large losses	limited effect on loss experience	significant effect on loss experience

Considerations Related to the Line of Business		
	Low Margin Situation	**High Margin Situation**
Environment - legislative - judicial - government	stable, no changes expected, or no recent changes	recent changes or changes likely
Length of tail	short	long
Latent claims	low potential for latent claims	high potential for latent claims
Liability exposure	limited or none	high
Excess of loss exposure	limited or none	high
Coverage and/or policy form	stable	significant changes
Compensation system (e.g., tort or no-fault)	stable	significant changes
Retention of the insurer	stable	change over the experience period

A change in the Standards of Practice effective December 31, 2009 increased the high margin of the claims development from 15% to 20%. While the previous Standards of Practice allowed for actuaries to select a margin above 15% in situations of unusually high uncertainty, in practice very few P&C actuaries selected margins for adverse deviations for claims development greater than 15%.

The intent of the increase in the high margin is to make clearer to P&C actuaries that selection of 20% in times of great uncertainty is acceptable. For example, it may be appropriate for an actuary to select a margin of 20% for the following:

> Automobile insurance in a specific province that is undergoing significant change due to tort reform or legal challenge to recently introduced tort reform,
>
> Introduction of a new line of business or operations in a new province for which there is limited relevant data from which to estimate policy liabilities,
>
> Significant change expected in future claims due to an increase in retentions and limited data for estimating the effect of such a change,
>
> Economic upheaval such as the financial crisis of the fall of 2008 and its effect on long-tail lines of insurance such as directors' and officers' liability.

The above examples are only intended to be illustrative of potential situations for which the actuary may choose to select a claims development margin greater than 15%. However, it is important to recognize that the above situations may not always necessitate a claims development margin greater than 15% and the decision will be based on the actuary's assessment of the uncertainty around the mean estimate.

The change in the high margin from 15% to 20% was not intended to shift all selected margins for P&C insurers. Many actuaries currently select between 10% and 15% for many of the longer-tail lines of P&C insurance. These claims development margins are selected based on a review of the numerous considerations underlying the actuary's estimate of claim liabilities and premium liabilities. It is not expected that these margins would change simply due to the increase in the high margin. However, if there has been a notable change in the environment and in the

actuary's assessment of the various considerations that influence the selection of the margin for adverse deviations, then a change may be justified.

Margin for Recovery from Reinsurance Ceded

The following table presents considerations for the actuary when selecting the margin for recovery from reinsurance ceded.

TABLE 5.2 Recovery From Reinsurance Ceded

	Low Margin Situation	High Margin Situation
Proportion of related party reinsurance	low	high
Ceded loss ratio	low	high
Ceded commission rate	low	high
Unregistered reinsurance	none	significant
Reinsurers under receivership or liquidation	none	significant
Reinsurers with weak financial condition	none	significant
Signed reinsurance contract/cover notes	yes	no
Claim coverage disputes with reinsurers	none	significant
Reinsurance with balance sheet exposure[3]	limited or none	significant

Margin for Investment Return Rates

The margin for adverse deviations for investment return rates addresses several different types of risk, such as

mismatch risk between payment of claims and availability of liquid assets,

error in estimating the payment pattern of future claims, and

asset risk including credit/default risk and liquidity risk.

The following table summarizes considerations related to the selection of an explicit margin for investment return rates.

[3] Balance sheet exposure is defined as: ceded unearned premium + outstanding loss recoverable from assuming company + amounts due from assuming company – amounts due to assuming company – cash or securities held as security from assuming company.

TABLE 5.3 Investment Return Rates		
	Low Margin Situation	**High Margin Situation**
Matching of assets and liabilities	cash flows are well-matched	significant mismatch of cash flows
Quality of assets	high	low
Reliance on capital gains	minimal	high
Capital losses	minimal	high
Length of claim settlement period	short	long
Claim payment pattern	stable	significant variability
Determination of interest rate	based on insurer's asset portfolio	not based on insurer's asset portfolio
Projected cash flow	positive	negative
Asset default risk	low	high
Asset valuation issues	none	significant
Concentration by type of investments	not a concern	significant concern
Concentration within types of investments	not a concern	significant concern
Current economic conditions	strong economy	recession
Investment expenses	low	high

It is important for actuaries to recognize that in an economic environment of low interest rates, mismatch risk and credit/default risk remain nevertheless. While following Standards of Practice, an actuary could derive a discount rate adjusted by margin for adverse deviations that is less than 0%. In practice, actuaries may limit the discount rate to 0% in such situations.

Two alternative formula-based approaches for deriving the margin for investment return are described below. These approaches should not be considered to be an exhaustive list of acceptable methods, but rather as examples of the types of quantitative approaches actuaries could consider when determining the explicit margin for investment returns. These formulas assume a non-stochastic approach and thus the resulting margins would be subject to the limits set out in the explicit margin approach (i.e., low margin limit of 25 basis points and the high margin limit of 200 basis points).

Weighted Formula

The weighted formula relies on defined variables,

*i*PM = interest rate for discounting based on notional matching of the individual insurer's portfolio of assets to claim liabilities prior to margin for adverse deviations

*i*AM = interest rate for discounting after margin for adverse deviations

*i*RFM = interest rate of risk-free bonds, which reasonably match the payout of the claim liabilities, at least as measured by duration

k = a factor between 0% and 100% to reflect a reasonable estimate as to the percentage by which *i*RFM would need to be adjusted to reflect a plausible shortening of the uncertain duration of the claim liabilities due to misestimation of the payment pattern coupled with a plausible shift in the yield curve.

The formula for *i*AM, the interest rate for discounting after margin is

$$i\text{AM} = \text{minimum}\ (i\text{PM},\ i\text{RFM} \times (1.00 - k)),$$

and, thus, the margin for investment return rate is defined to be

$$\text{Margin for Adverse Deviations} = i\text{PM} - i\text{AM} = i\text{PM} - \text{minimum}\ (i\text{PM},\ i\text{RFM} \times (1.00 - k)).$$

This approach treats the market spread between the return on matched risk-free bonds and other investments as a risk premium (whether from liquidity risk, default risk, or other risks) which would be removed for discounting purposes. A high value of *k* would result in a higher margin for adverse deviations, and a low value of *k* would result in a lower margin. An advantage of using this type of formula is that it is easily adaptable to the principles-based approach of IFRS Phase 2.

Explicit Quantification – Three Margins

This approach estimates the margin for investment return as the sum of three margins,

asset/liability mismatch risk margin,

timing risk margin, and

credit risk margin.

Asset/Liability Mismatch Risk Margin

The asset/liability mismatch risk margin is based on the formula,

coverage ratio

× (<u>asset duration – liability duration</u>)/liability duration

× interest rate movement in run-off period

where,

$$\text{coverage ratio} = \frac{\text{premium liability} + \text{claims liability}}{\text{investments} + \text{installment premiums}}$$

The actuary could estimate the interest rate movement in the run-off period based on a review of the interest rate movement over an extended period of time (e.g., twenty-five to fifty years).[4]

For example, assume the liability duration is two years. The actuary could then review the two-year change in investment rates as follows:

Yi = base year yield,

Yi+2 = yield two years after i,

(Yi+2 –Yi) / Yi = two-year change.

The interest rate movement in the run-off period could be estimated by multiplying the base year yield for a risk-free bond with similar duration to the liabilities by one standard deviation of the change for the same duration. For example, assume that the base year yield for three-year government of Canada bonds is 2.68% and one standard deviation of the two-year changes is 29%. Then the interest rate movement in the run-off period is equal to 78 basis points (2.68% x 29%). If the coverage ratio is 100%, the asset duration is five years, and the liability duration is two years, then the asset/liability mismatch risk margin based on the formula is 117 basis points.

[100% coverage ratio × ((5 years – 2 years) / 2 years) × 78 interest rate movement]

Timing Risk Margin

The timing risk margin could be estimated using the formula for determining discounted liabilities.

$$\text{Present Value (PV)} = \sum_{t}^{\infty} \frac{L_t}{(1.00+d)^t},$$

where L_t = paid losses in t,

d = discount rate, and

$$\sum_{t}^{\infty} L_t = L$$

$$= \frac{L}{(1.00+d)^D},$$

where D = duration of liabilities

If the duration of liabilities, D, is shortened by 10%, then the reduction in discount is equivalent to decreasing the discount rate (d) by approximately 10%. More precisely,

$$\frac{L}{(1.00+\hat{d})^D} = \frac{L}{(1.00+d)^{0.90D}},$$

where $\hat{d}$ is the discount rate adjusted for timing risk

[4] The reader is referred to the CIA "Report on Canadian Economic Statistics 1924-2008," which can be found at: http://www.actuaries.ca/members/organization/PC/IP/PC_IP_Docs_e.cfm?CODE=IP.

If the liability duration is two years and the discount rate is 3.50%, then $\hat{d}$ is 3.1445%, and consequently, the timing risk margin is 36 basis points (3.50% - 3.1445%).

Credit Risk Margin

The final component of this approach is the credit risk margin. The credit risk margin could be estimated by comparing the yield curves of high quality bonds, such as federal, provincial, municipal, utilities, the big five Canadian banks, and other corporate organizations. If a bond produces a higher yield than a risk-free government bond with similar maturity (i.e., a corporate bond generates higher yield than a Government of Canada bond with similar maturity), the investors in the bond market conclude that the issue of that corporate bond has credit risk. The extra yield on the corporate bond represents what the market considers to be credit risk spread; the latter is usually measured in basis points over the government bond with similar maturity.

For illustration purposes, assume that the portfolio has a credit risk margin of 40 basis points.

Total Margin

The total margin for investment return is equal to:

Asset/liability mismatch risk margin + timing risk margin + credit risk margin

= 117+ 36 + 40 = 193 basis points

Other Considerations

Investment expenses would be deducted from the portfolio yield before any calculations are performed. If the liabilities in a foreign currency are greater than the supporting assets in that foreign currency, then foreign exchange risk would be considered. Finally, if the bond portfolio is not sufficient to support the policy liabilities, the preferred and common stock expected total return rate would be included in the calculation.

Sometimes, bond investors demand liquidity and prefer government bonds over corporate bonds. This could increase the yield on corporate bonds as well as the difference between the bid and asked prices. However, this preference is difficult to quantify. Except in a chaotic market (e.g., September 2008 – March 2009), the extra yield due to poor liquidity would be ignored.

6. RELEVANT STATISTICAL CONCEPTS[5]

The subject of risk margins has received extensive review by numerous international organizations in the past several years including the IAIS, the IASB, and the IAA. Increasingly, actuaries and other insurance professionals are turning to advanced statistical methods as well as internal models for the analysis of risk margins. It is important to recognize that these are evolving areas with ongoing research, both theoretical and practical, by actuaries working with P&C insurers.

It is not the intent of this educational note to present a detailed discussion of statistics. It is expected that actuaries using stochastic methods for the determination of margins for adverse deviations have expertise in the fundamentals of statistical modeling, which are not addressed in this educational note. This section, however, briefly describes key risk concepts needed to understand and evaluate stochastic risk margin approaches. These key concepts include a risk

[5] Much of this section is copied directly from the IAA Risk Margin Report.

distribution, normal distribution, standard deviation, coefficient of variation (CV), skewness, and the rate at which claim or contract obligations, as applicable, are settled.

A risk distribution (or, simply, distribution) gives the probabilities that different outcomes of an uncertain process will occur. The normal distribution is a well known probability distribution. It has a form that requires two parameters, the mean (or probability-weighted average) that indicates its central point and the standard deviation that indicates its width or uncertainty. The normal distribution is sometimes described as well-behaved for the following reasons. First, it is symmetric in that, for each "good news" scenario, there is an identical and equally likely "bad news" scenario. Second, risk measures such as confidence levels and conditional tail expectations depend only on the standard deviation. Thus, there is a fixed relationship between risk measures based on standard deviation, confidence levels, or conditional tail expectations. Finally, the central limit theorem demonstrates that the sum of any set of homogeneous and uncorrelated risks will approximate the normal distribution as the number of risks increases to infinity.

However, the normal distribution is often not appropriate for P&C insurance situations, since there are rarely enough risks involved, individual risks are seldom symmetric, and the risks are usually correlated through inflation, environmental factors, court decisions, etc. The total claim distribution is only similar to "normal" in extremely large portfolios of risks with, at most, partial correlations involved.

The relative width of a risk distribution can be defined by its CV, which equals the standard deviation divided by the mean. This statistical measure is useful because a standard deviation of 1 million is small if the mean is 100 million, but large if the mean is 500,000. The CV is 1% in the first case and 200% in the second case.

Most P&C insurance risks have a high probability of having no claim or contract obligation during a reporting period. In some cases there may be a small probability of having a partial or small claim amount or obligation, with an even smaller probability of having a large claim. Statistically, distributions like this are described as having 'positive skewness' or being 'skewed'. They involve a parameter that represents the degree of skewness (represented by γ, the Greek lower case gamma) that is greater than zero. The normal distribution, because it is symmetric, has zero skewness.

Combining many contracts in a pool or portfolio often reduces but does not eliminate skewness. For some types of coverage, natural catastrophe coverages, for example, combining contracts may not reduce skewness, since such loss events either do not occur or arise under many contracts simultaneously.

Another factor that can affect the value of a risk margin is the time it takes to settle a claim or contract obligation. The risk distribution and the settlement times can be related, as claims or obligations that take longer to settle often have greater skewness and larger CV.

7. STOCHASTIC TECHNIQUES

Stochastic simulations can be powerful techniques for quantifying risk exposures underlying P&C insurance policies. These methods generate many possible future paths for the underlying variables, thereby producing a probability distribution of values for the risks. Such techniques can permit a deep understanding of the risk/return profile and allow for effective pricing, valuation, and management. However, as with any sophisticated tool, users require a full understanding of stochastic risk modeling for successful implementation and rational interpretation.

Actuaries using stochastic approaches to determine margins for adverse deviations may also be using stochastic methods in their determination of policy liabilities (i.e., claim liabilities and/or premium liabilities). As it is beyond the scope of this educational note to address stochastic modeling techniques except as they apply to the determination of provisions for adverse deviations, the reader is referred to the CIA's August 2001 Research Paper, Use of Stochastic Techniques to Value Actuarial Liabilities under Canadian GAAP prepared by the Working Group on the use of Stochastic Techniques (Working Group) of the Committee on Life Insurance Financial Reporting. Specifically, the PCFRC recommends a review of

> Section 3. When to Use Stochastic Simulation Methods for Actuarial Liability Valuation,
>
> Section 4. General Overview of the Stochastic Valuation Method for Actuarial Liability Valuation,
>
> Section 6.5. Correlation, and
>
> Section 7. Practical Issues.

As noted above, actuaries who derive margins for adverse deviations using stochastic methods may derive their estimate of policy liabilities using these same stochastic methods. There is a growing interest by P&C actuaries for the use of stochastic and advanced statistical techniques applied directly to the claim development triangles, such as the Thomas Mack method or the bootstrapping method. The Mack method derives formulas for the standard error of the reserves projected by the chain ladder method. The bootstrapping method is a sampling technique that generates empirical probability distributions by using sampling with replacement in historical data. The literature on these subjects is expanding rapidly. Many commercial P&C reserving software programs now contain these applications.

Actuaries using stochastic techniques for developing margins for adverse deviations would also take into account the considerations presented in section 5 of this educational note. For example, if an actuary's stochastic analysis resulted in a claims development margin for adverse deviations of 5%, while a review of the considerations related to operations, data, and the line of business resulted in a high margin assessment, the actuary would then reconsider the selection of a 5% margin for adverse deviations. Similarly, if an actuary's stochastic analysis resulted in a claims development margin for adverse deviations of 20%, while a review of the considerations related to operations, data, and the line of business resulted in a low margin assessment, the actuary would then reconsider the selection of a 20% margin for adverse deviations.

Actuaries considering a change from a deterministic approach to a stochastic approach for the determination of margins for adverse deviations would engage in discussions with the insurer's management and auditors to determine if such a change in approach represented a potential change in accounting policy. An important consideration would be the materiality of any resulting change. Since stochastic techniques may be more subject to variability from valuation date to valuation date, ongoing communication between the actuary and the insurer's management and auditors may be required.

When using stochastic models, it is important for the actuary to recognize that the provisions for adverse deviations do not cover the inherent or statistical volatility arising from a particular model. It is expected that large and small insurers would generate similar margins for adverse deviations when using the same model. The provisions do, however, cover the uncertainty in whether the actuary has the "right" model or "right" parameters. Thus, an actuary working with large volumes of data or more years of experience will likely have more confidence that the

selected model is "correct" and the resulting margins will likely be lower for larger volume or more established data than for smaller volume or less reliable data.

Mandating Assumptions for Stochastic Techniques

In the CIA 2001 Research Paper, the Working Group noted that it struggled with the issue of offering some prescription around the setting of assumptions. Offering "standard assumption corridors" for certain processes and/or risk factors would mean, by implication, that the actuary would have the responsibility to justify using values outside the given range. While this would offer valuable guidance to practitioners and might narrow the range of accepted practice, the working group concluded that establishing reasonable ranges for broad use (by life insurers) was impractical, inappropriate, and unmanageable for the reasons that

- it would entail very significant and time-consuming testing and review of experience data from across the industry,
- it would potentially require a large number of possible assumptions or variations in assumptions to be covered,
- it would be difficult to anticipate all the unique company circumstances that can legitimately affect the valuation results and therefore cause the prescription to be inappropriate,
- ranges would need periodic updating to reflect emerging experience, and
- it would undermine the integrity and responsibility of the Appointed Actuary.

These considerations are equally applicable to P&C insurers today, and so this educational note does not include mandated assumptions for the use of stochastic techniques. The actuary is reminded of his or her responsibility to ensure that the methods, assumptions and approximations used in the valuation of policy liabilities are reasonable and appropriate to the contracts being valued and furthermore that this responsibility is typically magnified when the valuation employs some form of stochastic testing.

Sample Products

Stochastic modeling will typically be of benefit when dealing with products characterized by skewed cost distributions with low frequency of occurrence, but high severity of impact and/or material variability in the cost distribution. For example,

- stop loss reinsurance,
- catastrophic P&C insurance risks,
- credit, warranty, and mortgage guarantee insurance, and
- long-tail lines of business such as professional liability.

Stop Loss Reinsurance

Individual stop loss cover is used by insurers to limit their risk exposure to the claims costs incurred by a specific covered insured to a threshold (or deductible) amount over a specified time period. Aggregate stop loss is used by insurers to limit their risk exposure to the claims costs incurred by an aggregated number or group of specific risks. Stop loss reinsurance may be evaluated by simulating the random variables that affect the insured event. The skewness of the cost distribution typically will increase as the threshold level is increased.

Catastrophic P&C Insurance Risks

Given the occurrence of an insured catastrophic event shortly before the valuation date, the actuary may find stochastic methods valuable for estimating claim liabilities. An insured catastrophic event may be evaluated by simulating the effects of the particular catastrophic event using stochastic models to provide a representation of the severity using methodologies based on various analytical, engineering, and empirical techniques.

Credit, Warranty, and Mortgage Guarantee Insurance

Credit, warranty, and mortgage guarantee are examples of P&C insurance lines in which coverage can extend for many years, and thus there can be significant premium liabilities at the financial reporting date. The financial results of these lines can be highly dependent on economic forces such as inflation, interest rates, and unemployment, with significant correlation between classes of business. As such, these lines of business can be subject to aggregation of losses driven by high frequency related to economic or other circumstances. While the claim liabilities and margins for adverse deviations may be estimated using traditional, deterministic approaches, stochastic modeling of the premium liabilities and their associated margins for adverse deviations may be more appropriate for these lines of insurance.

Long-tail lines of business

The distribution of unpaid liabilities for long-tail lines of business may be quite volatile and be subject to external forces such as inflation, both economic and social, judicial changes, and regulatory changes. Stochastic analyses of loss development factors and/or frequency and severity may be valuable to the actuary estimating claim and premium liabilities.

8. THREE P&C PRODUCT EXAMPLES

In order to compare the risk margin approaches on a consistent basis, the IAA Risk Margin Report presents a set of assumptions that covers a spectrum of insurance products. The following table summarizes the assumptions used by the RMWG of the IAA for three P&C insurance products.

	Sample Lines of Business		
	Product A	**Product B**	**Product C**
1. Notional Coverage Type	Automobile Third Party Liability	General Liability "Risky Liability"	Catastrophe Coverage
2. γ (gamma) (Measure of Skewness)	0.4	0.8	8
3. Coefficient of Variation (CV)	13.3%	26.1%	151.3%
4. Settlement pattern	medium	longer	medium
5. Risk distribution	Normal Power	Normal Power	Lognormal

The skewness, CV, and payment pattern are discussed in detail in Appendix C of the IAA Risk Margin Report. The risk distributions for the automobile third party liability (TPL) and general liability products are compound Poisson models represented by the normal power approximation with the selected skewness and CV. For these two lines, the normal power approximations are very similar to lognormal distributions with the selected CVs.

The RMWG notes that the risk distributions and settlement patterns used in the IAA Risk Margin Report are illustrative, as are the notional coverage descriptions. There is a range of variation

within each coverage, and there are coverages with characteristics that fall outside the range of these illustrations. In particular, a substantial portion of P&C premiums is for business with similar risk characteristics to Products A and B (personal and commercial property, respectively) but with a short settlement pattern. These short-tail lines, however, contribute a much smaller proportion of total liabilities.

The next two sections of the educational note refer to these three product examples.

9. QUANTILE APPROACHES

Establishing which statistical measurement is most appropriate for the determination of margins for adverse deviations based on stochastic techniques is an important decision. The difference between the selected measurement and the mean result (with explicit margin for adverse deviations applied to all non-stochastic variables) establishes the dollar provision for adverse deviations for the scenario tested assumptions.

This section discusses quantile approaches for the determination of margins for adverse deviations based on stochastic techniques. Specifically, the approaches addressed are

multiples of the standard deviation,

percentile or confidence levels, also known as Value at Risk or VaR, and

CTE, also known as Tail Value at Risk or TVaR.

These methods are among those suggested in the IAA Risk Margin Report[6] and by the IASB (2007 Discussion Paper Part II Appendix F9, page 36-37).

Multiples of Standard Deviation[7]

Simplicity and practicality are the two most often cited advantages of using a multiple of the standard deviation as a basis for determining the margin for adverse deviations.

Percentile or Confidence Levels

The use of confidence levels is currently the most common quantile method applied. Risk margin methods based on confidence levels express uncertainty in terms of the extra amount that must be added to the expected value so that the probability that the actual outcome will be less than the amount of the liability (including the risk margin) over the selected time period equals the target level of confidence. This level is also sometimes called the value at risk (VaR).

In Australia, general insurance (i.e., P&C insurance) is regulated by the Australian Prudential Regulation Authority (APRA) under the *Insurance Act* of 1973. Prudential Standard GPS 310 requires that provisions for insurance liabilities must include a risk margin[8] above the central

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[6] Note that the IAA Risk Margin Report presents three other methods that are not included in this educational note: cost of capital methods, discount methods, and conservative assumptions in the current estimate producing implicit risk margins.

[7] Although multiples of the second and higher moments of the risk distribution are identified as a type of approach that might be used to establish a value for risk margins, the IAA Risk Margin Report does not expand on this approach. Instead it notes that, "Variance, semi-variance or higher moment methods are not illustrated here, as there is currently no literature on their practical applications in determining risk margins for liabilities."

[8] GPS 310, Section 77 states that, "The valuation of insurance liabilities for each class of business must comprise:… (c) risk margins that relate to the inherent uncertainty in the central estimate values for **outstanding claim liabilities and premium liabilities**." Allowance for diversification or reinsurance or both can be made in determining the risk margin."

estimate value of those liabilities. The risk margins are calculated for each class of business and the aggregate of those risk margins must be greater than

> the margin that would give the provision a 75% level of sufficiency to meet the insurance liabilities, or
>
> one half of the estimated standard deviation of the insurance liabilities of the insurer.

Singapore and South Africa also require that claim liabilities include a minimum provision for adverse deviations based on a 75% confidence level. While these three countries have set a 75% confidence level threshold in their respective insurance legislation, it is important to note that there is currently no generally accepted method (from a regulatory, accounting, or actuarial perspective) for determining an appropriate quantile for the purpose of determining risk margins.

CTE

The CTE is a conditional expected value based on downside risk and can be defined as the average of outcomes that exceed a specified value such as the Qth percentile. CTE(Q%) is calculated as the weighted-average of the highest (100-Q)% of the results from stochastic simulation. For example, a 75th percentile CTE result is the mean result of the 25% highest cost scenarios. By way of comparison, CTE(0%) is, by definition, equal to the overall mean result since it is the average of all scenarios.

For life insurance, the Standards of Practice (paragraph 2320.51) state that

> "If the selection of scenarios is stochastic, then the actuary would adopt a scenario whose policy liabilities are within the range defined by
>
> > the average of the policy liabilities which are above the 60th percentile of the range of policy liabilities for the selected scenarios, and
> >
> > the corresponding average for the 80th percentile."

Thus, the Standards of Practice for life insurers require that margins for adverse deviations be between CTE(60%) and CTE (80%).

The 2001 Research Paper states that,

> "Setting the liabilities [for life insurers] in excess of CTE(80%) would not normally be an acceptable practice as the resulting coverage would be excessive and inconsistent with GAAP. Provision for more catastrophic, implausible or unknown events is done through required capital, which would normally be established at a much higher CTE%."

Unlike life insurance, there is no specific statistical measurement or percentile mandated by the Standards of Practice for P&C insurance. The examples prepared by the RMWG of the IAA, indicate that a range of CTE(60%) to CTE(80%) is likely too high for many traditional P&C lines of insurance.

Three P&C Product Examples

In the IAA Risk Margin Report, the risk margins for the three sample products are first presented as the number of standard deviations above the mean required to reach the selected confidence level and then as a percentage of the discounted current estimate. Recall that Product A is representative of automobile third party liability, Product B of "risky" general liability, and Product C of catastrophe coverage.

Table 9.1 Risk Margins at Selected Confidence Levels
Number of Standard Deviations[9]

Product	γ (gamma)	Number of Standard Deviations Above the Mean Required to Reach Selected Level of Confidence				
		Confidence Level			CTE	
		65%	75%	90%	40%	75%
A	0.4	0.33	0.64	1.32	0.63	1.33
B	0.8	0.27	0.60	1.37	0.62	1.30
C	8.0	(0.11)	0.10	0.81	0.38	1.08

Table 9.2 Risk Margins at Selected Confidence Levels
Risk Margin as % of Discounted Current Estimates

Product	γ (gamma)	Percent of Discounted Current Estimate				
		Confidence Level			CTE	
		65%	75%	90%	40%	75%
A	0.4	4.4%	8.5%	17.6%	8.4%	17.6%
B	0.8	7.1%	15.7%	35.7%	16.2%	33.9%
C	8.0	-16.0%	15.1%	123.2%	51.7%	164.6%

The risk margins illustrated in Tables 9.1 and 9.2 assume that the risk would be measured separately for each line of business based on the experience of the reporting entity alone.

Comparing the number of standard deviations to confidence levels,

If the risk distribution is normal, the number of standard deviations to achieve a particular confidence level would be constant between products.

Since the risk distributions for these contracts are not normal, the number of standard deviations from the mean to achieve a particular level of confidence decreases as the risk distribution becomes more skewed. For example, Table 9.1 shows that the number of standard deviations from the mean to achieve the 65% and 75% confidence levels decreases as the risk distribution becomes more skewed (i.e., reading down the column).

Conversely, in order to have the risk margin at the same multiple of the standard deviation for all contract types, the confidence level would be larger for distributions with more skewness.

Using a risk margin equal to a fixed number of standard deviations produces positive risk margins, even for highly skewed distributions.

In both tables above, for the extreme case (Product C), the risk margin for the 65% confidence level is negative, meaning that the 65% confidence level is lower, not higher

[9] Simulation analysis was conducted to reproduce the findings in the IAA Risk Margin Report. All findings were verified except the number of standard deviations at CTE(40%) and CTE(75%) for Product C. The values in Table 9.1 reflect the calculations prepared on behalf of the PCFRC and not those contained in the IAA Risk Margin Report.

than the mean of the distribution. This shows that at least for certain extreme distributions, use of confidence levels without some adjustment may not give appropriate risk measures. In Australia, for example, supervisory risk margins for general insurance are based on a 75% confidence level, subject to a minimum of one-half standard deviation.

Using CTE rather than confidence levels produces risk margins that are consistent with confidence level risk margins for the less skewed distributions, but does not decrease or produce negative risk margins with increasing skewness, even for the most skewed distributions.

Comparing the CTE to number of standard deviations, we note that if the standard deviation is considered as a risk measure, the results for the less skewed products are consistent with confidence level and CTE. For example, the 75% confidence level corresponds to approximately 0.65 standard deviation above the mean for products A and B. However, for the very risky product C, the CTE risk measures require a margin equal to more standard deviations than less skewed products. The CTE is therefore more risk sensitive than the number of standard deviations and may be a better risk measure for risks with skewness at the extreme end. Ultimately, it can be said that the number of standard deviations may be a more consistent measure for expressing profitability, while CTE is more relevant to measure security.

Evaluation of Quantile Methods

In evaluating the various methods for developing risk margins, the IAA Risk Margin Report suggests that two aspects of insurance liabilities be considered to measure risk margin,

time – the rate at which risk is released over time (i.e., settlement pattern), and

shape – the risk distribution of possible outcomes around the mean value, at the reporting date, over a specified time horizon.

The IAA paper applies the term quantile methods to a group of methods that rely only on the *shape* aspect of risk. In the examples, shape was measured variously by standard deviation, confidence levels (VaR or percentiles), and CTE. For each of these shape measurement statistics, the method requires one parameter, number of standard deviations (e.g., 0.6), the confidence level (e.g., 75%), or the CTE level (e.g., 40%), respectively.

Comparing the three quantile methods illustrated in section 9, it is observed that within the range of most contracts the risk margin based on confidence levels does not increase with increasing skewness of the product risk distribution. Increasing margins with increasing skewness is a property that is considered desirable in a risk margin. In the examples, the CTE and standard deviation measures did behave as desired in that respect.

Products with longer settlement times tend to have riskier shapes than products with shorter settlement times, but there is no direct relationship between time and risk as measured by the quantile methods, according to the IAA paper. The IAA paper continues with the comment,

> "A quantile method will have the same risk margin for a set of obligations that settles over five years as for a set of obligations that settle over two years, if both sets of obligations have the same shape parameter. For example, unpaid claims for a short tail liability product and for excess property product might each have a distribution of settlement amounts described by a log normal distribution with coefficient of variation of, say, 20%. While the property unpaid claims will settle over two years and the liability unpaid claims might settle over five years, both will have the same quantile based risk margins. This assumes the quantile method

> is applied in the usual fashion. Applying an approach that varies with time would solve that issue."

The addition of a measurement for parameter uncertainty is one possible enhancement to a stochastic analysis for the purpose of reflecting the time consideration. For longer-tail lines, there is generally an expectation of greater uncertainty, for example in the older development factors and/or tail factor. A greater degree of parameter uncertainty for liability than for the excess property (referring to the IAA example above) would lead to a greater margin for adverse deviations for liability using quantile approaches.

Practical Issues and Partial Solutions of Quantile Approaches

Selection of Confidence Level or CTE Level

While practice has developed in some countries, no theory or practice has yet developed to determine what confidence or CTE level relates directly to P&C insurance for the purpose of determining margins for adverse deviations.

Different Confidence Levels for Different Products or During Claims Runoff

As shown in the three product examples, it might be appropriate to use different confidence levels for different products. Note that an appropriate methodology to develop a specific level of overall confidence has not yet been developed and it is unclear whether it may exist. Varying the levels chosen by product emphasizes this difficulty. In addition, having different confidence levels by product may make it more difficult to achieve consistency.

During the course of claim runoff, the risk distribution may become wider and increasingly skewed; that is, there are fewer claims and the remaining claims may be larger. As a result, as with differences by product, different confidence intervals by claim runoff year may be necessary to maintain a consistent risk margin for a growing or declining portfolio.

While different confidence levels may be required for different products and years at different levels of maturity, a constant CTE level or a multiple of standard deviations approach might better achieve the desired simplicity.

Sources of Risk Distributions and Treatment of Extreme Events

The examples shown previously are based on theoretical distributions. In practice, risk distributions may be partly based on methods such as curve fitting and stochastic modeling.

One difficulty with these techniques is that there is usually insufficient or no information on the effect of extreme events. Among the approaches to address this problem are the use of

> weighted averages of possible scenarios of relevant extreme events (usually those not reflected routinely or at all in the available data), and
>
> judgmental analysis of particular operational or risk issues (e.g., new claims or underwriting systems or procedures).

In addition, the examples assume that estimates of the probabilities of all outcomes are available. In practice, a complete distribution may not be necessary. For example, there are statistical methods for estimating moments from the data without a deeper knowledge about the complete risk distribution. Also, it may be sufficient to identify the severity of events only at specified probability levels. Stress and scenario testing might be used to provide information regarding the events at the required levels of probability.

Moreover, the risk distribution needs to include provision for the possibility that the underlying model is incorrect in some respects. For example, in estimating expected property insurance outcomes, the assumption that extreme weather conditions are becoming more common may be appropriate. There are some techniques for addressing such risks, but this area remains a matter for ongoing research.

Nonetheless, the degree of potential unreliability of models, particularly for extreme events, even with the mitigation strategies noted above, remains significant, since quantifying this risk can be complicated.

Professional judgment and regulatory, accounting, and professional guidance may be required to determine the appropriate approach.

10. COMPARISON OF RISK MARGIN METHODS

This section of the educational note first presents a summary of observations regarding the various methods for determining margins for adverse deviations. The observations are followed by a comparison of the methods from a quantitative perspective and then from a qualitative perspective. The qualitative review includes a comparison of each method to the desirable characteristics of risk margins identified by the IAIS and the IAA.

Summary Observations

In the quantile family of methods, CTE approaches are theoretically more sound than confidence level approaches, with the differences being significant for products with more skewed risk distributions. Regulatory oversight or actuarial practice would apply higher confidence levels for products with risk distributions that are more highly skewed.

Explicit assumptions are best considered as useful approximations for implementing a quantile method. Consistency among insurance products and between insurance and other industries is challenging using a purely explicit assumption approach.

Quantitative Comparison

Quantitative comparisons of the methods show that

for Product A, a CTE(40%) is similar to the 75% confidence level,

Product B shows very different results for the 65% and 75% confidence levels. Similar to Product A, the 75% confidence level is close to the CTE(40%).

for Product C, the range of possible risk margins is very wide. Use of the CTE measure or multiple of standard deviations in the quantile method avoids the negative risk margins that would be calculated using confidence levels.

The following table compares the examples from the methods described in section 9.

Table 10.1 Comparison of Risk Margins from Different Methodologies

Risk Margin Approach	Product A	Product B	Product C
1. 0.5 standard deviations	6.7%	13.1%	75.7%
2. 1.0 standard deviations	13.3%	26.1%	151.3%
3. 65% confidence	4.4%	7.1%	-16.0%
4. 75% confidence	8.5%	15.7%	15.1%
5. 90% confidence	17.6%	35.7%	123.2%
6. 40% CTE	8.4%	16.2%	51.7%
7. 75% CTE	17.6%	33.9%	164.6%
Notional Coverage Type	automobile third party liability	general liability "risky liability"	catastrophe coverage

It is interesting to compare the indicated risk margins in the above table to the range of margins set out in subsection 2260 for deterministic analyses. For product A (automobile third party liability), all risk margin approaches result in a margin for adverse deviations that is within the 2.5% to 20% range. For product B (general liability "risky liability), three of the approaches exceed the 20% high margin: 1.0 standard deviation, 90% confidence, and 75% CTE. For product C (catastrophe coverage), only the 75% confidence produces a margin for adverse deviations that is within the range specified in subsection 2260 for claims development.

A selection above the 20% high margin is still possible as mentioned in paragraph 2260.04 of the Standards of Practice, "A selection above this high margin for adverse deviations would be appropriate, however, for unusually high uncertainty". Furthermore, paragraph 2270.03 of the Standards of Practice states, "a selection above the high margin for adverse deviations set out in paragraph 2260.02 may be appropriate when stochastic modeling indicates variability in estimates of policy liabilities that may not be identified using deterministic analysis."

Qualitative Comparison

This final section compares the various risk margin approaches described in this educational note (i.e., explicit assumptions, multiple of standard deviation, confidence level, and CTE) with the desirable characteristics identified in section 3.

Compliance with the Five IAIS Characteristics

The five characteristics identified by the IAIS, from section 3, are repeated here for convenience.

a. The less that is known about the current estimate and its trend; the higher should be the risk margins.

b. Risks with low frequency and high severity should have higher risk margins than risks with high frequency and low severity.

c. For similar risks, contracts that persist over a longer timeframe should have higher risk margins than those of shorter duration.

d. Risks with a wide probability distribution should have higher risk margins than those risks with a narrower distribution.

e. To the extent that emerging experience reduces uncertainty, risk margins should decrease, and vice versa.

There are two possible interpretations of characteristic c. One interpretation is that

> liabilities that persist over a longer timeframe have increased exposure to risks, and hence will have higher risk margins, than shorter tail liabilities that are otherwise exposed to similar risks. We call this c-1.

Another interpretation is that

> for two sets of liabilities with the same riskiness in their distribution of ultimate settlement values (i.e., having similar risks) the risk margin should be higher for the liabilities that settle over a longer time period. We call this c-2.

For example, unpaid claims for short tail liability coverage and for excess property coverage might each have a distribution of settlement amounts described by a lognormal distribution with a coefficient of variation of 20%. The property unpaid claims will settle in two years; and the liability unpaid claims might settle in five years. From a quantile perspective the two sets of unpaid claims would have the same risk margin, without adjustment or refinement in the modelling process (i.e., adjustment for parameter uncertainty).

An assessment of the methods against these characteristics, which are referred to as the six extended IAIS characteristics, including both c-1 and c-2 follows.

Explicit Assumptions

Although explicit assumptions could be constructed in a manner to address the characteristics, they do not necessarily satisfy any of the characteristics. Each product would need its own set of assumptions.

As an implementation approach, explicit assumptions, selected by product, could be made to approximate the percentile method. If the approximation were sufficiently close, the explicit assumption approach would satisfy the characteristics to the same extent as the method it approximates.

Quantile Methods

All of the quantile methods fail characteristic c-2. Consider two products that have the same risk distribution for unsettled contract obligations at the reporting date, but have obligations that involve settlement over two different time periods. To comply with characteristic c-2 the margins would be different. However, the risk margins for the two products, based on the number of standard deviations, confidence level, CTE, or any method that relies only on characteristics of the risk distribution, would not be different.

In addition, the confidence level method does not necessarily satisfy characteristics (a), (b), (d) or (e). In section 9, we show that highly skewed distributions (e.g., Product C) can result in negative risk margins, as increasing skewness is accompanied by a decreasing rate of increase in

risk margins. More generally, the examples also show that, as distributions become more dispersed and more skewed, the risk margins implied by a fixed confidence level include fewer standard deviations. This violates the spirit of characteristics (a), (b), (d), and (e).

CTE and methods based on multiples of the standard deviation generally satisfy characteristics (a), (b), (d), and (e) better than do the confidence level method. Table 9 shows that the CTE method and multiples of standard deviation methods are consistent for the more well-behaved products (A and B), but that the use of CTE is more sensitive to increasing risk than is multiples of standard deviation. However, while CTE is more refined in that it can provide a better insight into the tail amounts, its general approach is similar to that of confidence levels.

Compliance with IAA Desirable Characteristics

In the following table, we summarize the IAA characteristics (presented in section 3) and present an assessment of whether or not each method meets or can meet the objective.

Table 10.2 Comparison of Risk Margins with IAA Desirable Characteristics

IAA Desirable Characteristics	Explicit	Deviation	Confidence Level	CTE
Consistent methodology for lifetime of contract	achievable	achievable	achievable	achievable
Assumptions consistent with current estimates	achievable	achievable	achievable	achievable
Consistent with sound pricing practices	not typically used	not typically used	not typically used	not typically used
Vary by product based on risk differences by product	yes	yes	yes	yes
Easy to calculate	yes	relatively easy	relatively easy	relatively easy
Consistently determined between reporting periods	achievable	achievable	achievable	achievable
Consistently determined between entities	achievable	difficult without mandated assumptions	difficult without mandated assumptions	difficult without mandated assumptions
Facilitate useful disclosure to stakeholders	achievable	achievable	achievable	achievable
Provide useful information to users of financial statements	achievable	achievable	achievable	achievable
Consistent with regulatory solvency and other objectives	yes	yes	yes	yes
Consistent with IASB objectives (i.e., market consistent)	unknown	unknown	unknown	unknown

All of the methods can be applied based on a consistent methodology for the entire lifetime of the contract. Moreover, to the extent that each of the methods utilizes assumptions relevant to current estimates, they would be implemented in a manner consistent with emerging experience as the experience affects the current estimates.

Within the current Canadian P&C environment, none of the methods is currently used extensively for pricing purposes. The fourth IAA desirable characteristic relates to consistency among classes of business. While, all methods vary by product based on risk differences in the product, the previous section expands on this discussion. A comparison of each method to the IAIS desirable characteristics shows that some methods are more responsive to the variability by product than others.

The fifth IAA desirable characteristic is ease of calculation. We consider the mechanical application of formulas or the use of models that require no judgemental inputs to be "easier" than methods that require judgement in addition to the calculations. Methods that require fewer simulations of future results are also characterized as easier than methods that require more extensive simulations of future results.

The minimum level of likely disclosure would be the amount of risk margin and the basis for deriving that amount. Any approach would allow for the minimum level of disclosure.

For the quantile methods, the methodology chosen and the key parameters in the calculations would be disclosed. Note that it is always a challenge to describe actuarial methods and parameters in a layperson's terms. However, there is no method for which such disclosure would not be possible.

To the extent that market-consistency is required as a principle guiding the measurement or as a tool to enhance consistency based on an external benchmark, there are limitations in the methods presented in this educational note. None of the approaches resolve the issue that there may not be information about how market participants assess the risk to be measured.

11. DOCUMENTATION AND REPORTING

The Standards of Practice (subsection 1560) state, "Documentation is an integral part of work that affects the application of nearly all standards... Appropriate documentation describes the course of the work and the actuary's compliance with accepted actuarial practice." Thus, the actuary would document his or her process for determining margins for adverse deviations.

Documentation is important regardless of whether the actuary uses explicit assumptions or stochastic techniques for the determination of margins for adverse deviations. Actuaries following the explicit assumptions approach would document the considerations that were critical in their selection of margins for adverse deviations. Actuaries conducting stochastic analyses would document what components are modeled as random variables as well as the primary assumptions (e.g., selected distributions and parameters). The documentation for both explicit assumptions and stochastic techniques would include support for key decisions made by the actuary.

With respect to reporting, it would normally be in the user's interest to be aware of the margins for adverse deviations selected by the actuary. Accordingly, it seems reasonable that the actuary would consider some disclosure regarding the margins for adverse deviations within the actuarial work product for both internal user and external user reports.

However, this consideration would also take into account the complexity of the concept of margins for adverse deviations, the potential importance of the concept to the user, as well as the sophistication of the user who will be receiving the work product. In some cases, it may be apparent that extensive discussion of the margins for adverse deviations is likely to give rise to misunderstanding and confusion. In other cases, full disclosure of the process and rationale for selecting the margins for adverse deviations may be appropriate.

According to subsection 1820 of the Standards of Practice – Reporting: External User Report,

> 1820.07 "Appropriate description and disclosure in a report strike a balance between too little and too much. Too little disclosure deprives the user of needed information. Too much disclosure may exaggerate the importance of minor matters, imply a diminution of the actuary's responsibility for the work, or make the report hard to read."
>
> 1820.08 "The appropriate criterion for description and disclosure is the question: 'What qualitative and quantitative information best serves the user's understanding and decision-making?'"

It is also important for the actuary to communicate with the insurer's auditors, particularly regarding any significant change, either in the value of margins for adverse deviations or the process for determining such values.

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Second Revision – Educational Note

Premium Liabilities

Committee on Property and Casualty Insurance Financial Reporting

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

MEMORANDUM

To: Members in the property and casualty insurance area

From: Pierre Dionne, Chair
Practice Council

Julie-Linda Laforce, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: July 12, 2016

Subject: **Second Revision – Educational Note: Premium Liabilities**

This educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting in accordance with the Institute's Policy on Due Process for the Approval of Guidance Material other than Standards of Practice and Research Documents, and received final approval for distribution from the Practice Council on July 11, 2016.

As outlined in subsection 1220 of the Standards of Practice, "The actuary should be familiar with relevant Educational Notes and other designated educational material". That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation". As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them".

Questions or comments regarding this educational note may be directed to Julie-Linda Laforce at julielindalaforce@axxima.ca.

PD, JLL

1. Introduction

Appointed Actuaries (AA) for property & casualty (P&C) insurers in Canada are required to value insurance contract liabilities which include both claim liabilities and premium liabilities. Specifically, the Standards of Practice (SOP) state that

> 2130.01 The actuary should value the insurance contract liabilities and the reinsurance recoverables for the balance sheet and the changes in them for the income statement.

In actuarial literature, much attention is given to the definition of claim liabilities. Premium liabilities are often defined by exception. The SOP has the following definitions:

> 1110.27.2 Insurance contract liabilities in an insurer's statement of financial position are the liabilities at the date of the statement of financial position on account of the insurer's insurance contracts, including commitments, which are in force at that date or which were in force before that date.
>
> 1110.13 Claim liabilities are the portion of insurance contract liabilities in respect of claims incurred on or before the balance sheet date.
>
> 1110.37 Premium liabilities are the portions of insurance contract liabilities that are not claim liabilities.

The SOP provides additional details on premium liabilities in subsection 2230.

Specifically, premium liabilities include the expected costs in connection with the unexpired portion of the in-force insurance contract (i.e., incurred after the valuation date) and all other liabilities related to premium development adjustments (e.g., retro-rated premium, contingent profit commissions, etc.).

Elements to consider when analyzing premium liabilities generally include the following:

- Unearned premium reserve;
- Deferred policy acquisition expenses;
- Unearned (ceded) commission;
- Premium deficiency;
- Ceded deferred premium tax (applicable for inter-company pooling arrangements);
- Anticipated broker/agent commission;
- Expected adjustments (plus or minus) to swing-rated policies;
- Expected changes to premiums as a result of audits, late reporting, or endorsements; and
- Expected commission adjustments on policies with variable commissions.

Currently, premium liabilities are not shown explicitly in an insurer's financial statements. Some elements of the premium liabilities are calculated by the insurer and carried in the P&C Annual Return, while others must be estimated by the AA.

It is the AA's responsibility to evaluate the gross and net policy liabilities in connection with the unearned premium, including the assessment of the need for a premium deficiency reserve, and the maximum amount of deferrable policy acquisition expense.

The main elements related to premium liabilities are included in the regulatory expression of opinion in the AA report (see appendix D).

Minimum Capital Test (MCT) Calculation

Since 2012, the AA's estimate of premium liabilities and the duration on these liabilities, net of reinsurance recoverables (the net premium liabilities), is used in the calculation of the Interest Rate Risk Margin in the MCT pages of the P&C Annual Return. With the MCT Guideline effective January 1, 2015, the estimated net premium liabilities is also used to derive the Insurance Risk Margin in the P&C Annual Return, replacing unearned premium as the basis for the calculation of a premium-related margin. The formula requires the Insurance Risk Margin to be calculated by class of insurance. In this context, "class of insurance" is intended to be consistent with definitions prescribed by the regulator for statutory financial reporting.

Appendices B and C provide guidance on the evaluation of the gross and net premium liabilities respectively, by class of insurance, and provide detail on the corresponding entries in the AA's expression of opinion in appendix D.

Definitions

Deferred policy acquisition expenses (DPAE but also referred to as DPAC or DAC): Prepaid acquisition expenses which relate to the unexpired portion of the policy. These expenses are paid up front when the policy is issued but are not expensed on the income statement until the premium is earned. A deferred asset is set up for these prepaid expenses on the balance sheet. These expenses generally include broker/agent commissions and premium taxes but may also include an allocation of operating expenses such as renewal costs, advertising, licenses and fees, associations and dues, etc. The DPAE is an asset which recognizes the prepaid expenses over the policy period provided that such costs are recoverable from the equity in the net unearned premium reserve (UPR), as evaluated by the AA.

Earning pattern: Premiums should be earned on a basis consistent with the occurrence of losses. For most lines of business, losses are assumed to occur at a uniform rate during the year and premiums are earned on a pro rata basis over the term of the policy. However, for some lines of business this assumption is not appropriate. For example, most motorcycle losses occur during the period April to October and the earning pattern would recognize the timing of the loss exposure. Similarly, extended warranty premiums would be earned according to the expected payment of losses: for a three-year warranty there may be no exposure in year one if there is a manufacturer's warranty in force. The exposure would be expected to increase in the second and third years.

Equity in the gross unearned premium: amount by which the gross UPR exceeds the gross policy liabilities in connection with unearned premium.

Equity in the net unearned premium: amount by which the net UPR plus unearned (reinsurance) commissions exceeds the net policy liabilities in connection with unearned premium.

General expenses: these expenses include operational overhead and servicing expenses that are not related to the acquisition of new of renewal business. These expenses generally come from the P&C Annual Return (page 20.30) and exclude loss adjustment and investment expenses.

Maximum allowable DPAE: is the maximum of the equity in the UPR and zero. If the equity in the net UPR drops below zero, then the booked DPAE is reduced to zero and a premium deficiency amount is required to be carried on the balance sheet for the difference. Section 3 discusses the determination of the maximum allowable DPAE.

Policy liabilities in connection with unearned premium (premium liabilities): liabilities for future events consisting of the following items relating to the actuarial present value (APV) on the unexpired portion of the policies in-force at the valuation date:

- Future claims and adjustment expenses;
- Expected reinsurance costs based on anticipated contracts that are not yet underwritten; and
- Maintenance costs: i.e., administrative costs of servicing the in-force policies.

Premium deficiency: a provision that is determined by the AA when the equity in net UPR is negative. It is the amount which, when added to the net UPR and unearned (reinsurance) commissions, makes an appropriate provision for future costs arising from the unexpired portion of in-force policies.

Unearned (ceded) commissions: Unearned (reinsurance) commissions arise from commission revenue on reinsurance ceded premium. Quota-share reinsurance agreements generally provide for reinsurance commissions to be paid to the insurer by the reinsurer on the ceded premium. The reinsurance commission relating to the unexpired portion of a policy (i.e., the reinsurance commission on the unearned ceded premium) is carried as a liability. These unearned commissions generally include a total provision for broker/agent commissions, premium taxes, and other acquisition and servicing expenses.

Unearned premium reserve (UPR): the written premium associated with the exposure remaining on the unexpired portion of the policy under a contract of insurance. The UPR at the valuation date usually is established based on the written premium, the policy term, and an assumed earning pattern.

2. Policy Liabilities in Connection with Unearned Premium

The largest component of the policy liabilities in connection with unearned premium relates to future claims and adjustment expenses. They are estimated by applying a selected expected loss ratio to the UPR. This evaluation is generally undertaken by line of business or using a business segmentation that is consistent with the analysis of claim liabilities.

In order to facilitate the MCT calculations referred to in section 1, the AA may wish to use a business segmentation which produces estimated future costs that can be aggregated to an Annual Return class of insurance level. An example provided in the appendices illustrates the estimation of the net premium liabilities by class of insurance for purposes of deriving the MCT insurance risk margin on page 30.64 of the P&C Annual Return.

Expected Losses

The evaluation of future expected loss ratios in connection with the unexpired portion of in-force policies is a critical aspect of determining the future expected losses. Many evaluation methods may be used depending on the complexity of the business segments and characteristics of the insurer. Projected loss ratios may be based on the AA's valuation of claim liabilities, on the insurer's budget, on the results of a ratemaking analysis or on an ad hoc analysis, as considered appropriate. Generally, future expected losses are based on the insurer's recent experience adjusted to the period during which the unearned premium will be earned. The AA would consider the earning pattern underlying the calculation of the UPR, assess whether it reflects the exposure to risk, and select assumptions accordingly.

Examples of adjustments to the historical experience would include, but are not limited to, the following:

- Loss trends applied to adjust historical cost levels to the average accident date underlying the UPR;
- Expected legislative change impacts (including mandated benefit modifications);
- Recent court decision impacts relating to insurance coverage;
- Mix of business change impacts;
- On-level factors applied to adjust historical experience to the rate level underlying the UPR;
- Catastrophe and large losses loadings;
- Seasonality adjustments to the indicated expected loss ratios may need to be applied if the claims occurrence pattern is not uniform throughout the exposure period of the UPR (e.g., seasonal occurrences of hurricanes). Depending on the line of business, the seasonality adjustment may not be significant. However, for some portfolios (e.g., property catastrophe treaty reinsurance) seasonality may be a meaningful consideration; and
- Policy term assumptions taking into account the term of the policy and the future period covered by the UPR. For example, for policies with a term longer than 12 months (such as warranties or multi-year contracts), assumptions for the expected loss ratio need to take into consideration trends that are expected over the remaining term of these polices.

Various considerations for claim liabilities and premium liabilities are listed in the educational note Valuation of Policy Liabilities – P&C Insurance Considerations Regarding Claim Liabilities and Premium Liabilities.

Loss Adjustment Expenses

AAs may choose to include allocated loss adjustment expenses (ALAE) in their estimation of losses. If ALAE is not included with losses, an estimate of future ALAE would be derived by the

AA by applying an approach similar to the expected loss approach, or on another suitable basis consistent with the AA's valuation of claim liabilities.

Similarly, AAs may choose to include unallocated loss adjustment expenses (ULAE) in their estimation of losses. If ULAE is not included with losses, an estimate of future ULAE would be derived by the AA on a suitable basis consistent with the AA's valuation of claim liabilities. A typical calculation is to apply a ULAE ratio based on historical experience reflecting any expected changes in claims practices to the expected losses.

In order to facilitate the MCT calculations referred to in section 1, the AA may wish to consider the extent to which ALAE ratios and ULAE ratios might vary by Annual Return class of insurance.

Expected Reinsurance Costs

For the net policy liabilities in connection with unearned premium, in addition to the above considerations, the AA would also consider expected reinsurance costs. The manner to properly reflect reinsurance costs will depend on the type of reinsurance treaty and its terms and conditions.

For example, for a line of business covered by a proportional reinsurance treaty, the net unearned premium will be lower than the gross unearned premium and the loss ratio will be the same on a gross and net basis. For a line covered by an excess of loss treaty expiring at the valuation date, the gross and net unearned premium are the same and the ceded unearned premium is $0 at the end of the contract period. However, the cost of reinsurance in relation to the unexpired portion of the policies would be taken into account. The assumptions used would reflect the reinsurance rates and expected recoveries consistent with the reinsurance structure in place over the exposure period of the unearned premium.

Maintenance Expenses

Maintenance expenses also need to be included to reflect the future cost of servicing the policies in force. These expenses include expenses associated with endorsements, mid-term cancellations, changes in reinsurance contracts, etc. Maintenance expenses are generally expressed as a percentage of gross UPR and are evaluated as a portion of general expenses with typical ratios ranging from 25 percent to 50 percent.

In order to facilitate the MCT calculations referred to in section 1, the AA may wish to consider the extent to which general expense ratios vary by line of business based on the following considerations:

- The availability of historical and/or company plan expense information by line of business;
- Distribution model of the insurer;
- Characteristics of the insurer's portfolio (e.g., two-year contracts); and
- Any other considerations.

Maintenance expense assumptions are usually consistent from year-to-year; but may vary in the event of rapid growth or changes in the insurer's operations.

Discounting for Time Value of Money

Premium liabilities should be calculated on an APV basis, consistent with the SOP. The APV includes the time value of money and explicit provisions for adverse deviations (claims development, investment return rates, and recovery from reinsurance ceded) which is discussed below.

With regards to the time value of money, the cash flows other than losses and loss adjustment expenses (i.e., reinsurance costs and maintenance expenses) would also be considered but are not generally material to the calculation of the premium liabilities.

The discount rate for premium liabilities would generally be consistent with the discount rate used for discounting the claim liabilities, and generally would be based on a cash flow modelling of all policy liabilities including any premium payment lags (i.e., installment premiums).

The payment pattern for discounting premium liabilities would normally be consistent with that used for claim liabilities. As illustrated in appendix B, sheet 5, a future accident period payment pattern (for a given line of business) would typically be discounted to the valuation date for claims liabilities purposes. However, an adjustment would be required to reflect differences in the average accident date (AAD) of a future accident period versus the average accident date underlying the UPR (which is a partial accident period).

For example, assuming premium writings occur uniformly in a calendar year and the corresponding losses are also incurred uniformly throughout the year, the mean earning date and the mean accident date of a future accident year occurs at 0.50 years or halfway through the year. However, for the expected losses underlying the UPR, the average accident date is not as straightforward a calculation. This exercise involves calculating a weighted average or mean of the future accident dates using uniformly declining exposures as weights.

The average accident date or earning date of the UPR can be calculated by using integrals in calculating the weighted average.

Let *x* = future accident date underlying the UPR relating to 12-month policies

Let *f(x)* = the loss exposure earned on a given future accident date

= 1 – x; where 0≤ x ≤1

And x = 0 is the valuation date and x = 1 is one year later (assuming annual policies) i.e., the last date the loss exposure exists.

Let the average accident (or earned) date equal $\int_x f(x)$ integrating over the values 0 through 1, divided by the sum of the probability.

$$= \frac{\int_0^1 x\, f(x)\, dx}{\int_0^1 f(x)\, dx} = \frac{1}{3} \text{ year}$$

Thus, the average accident date or earning date of the UPR can be calculated as one-third of a year or four months (May 1 assuming a December 31 year end).

If the calculation were to be repeated for six-month policies, the results would show an average accident period of two months (or March 1 assuming a December 31 year end).

The median may be a reasonable approximation of the mean accident date. The median accident date is calculated using simple trigonometry assuming premiums and losses are uniformly distributed and the sides of the UPR triangle are set equal to 1.00. The equation to solve for the length of the triangle sides, x, that yields half the area of the triangle or ¼ would be $\frac{1}{2} x^2 = \frac{1}{4}$ or $x = \sqrt{0.5}$. Note that the length of the triangle side is defined here as the time from the median accident date to the end of the period or time 1. Therefore, the desired timing from time 0 (or the valuation date) to the median accident date would be the complement or $1 - \sqrt{0.5}$ or 0.2929 years.

Once the average accident date underlying the UPR is determined, the present value may be derived directly from the present value of a future accident year, as illustrated in appendix B, sheet 5, by assuming that the present value of an average loss discounted to the accident date is equivalent to the present value of the UPR's expected losses at its average accident date. The final adjustment is to then discount from the average accident date back to the valuation date. A mathematical proof for this approximation is shown in appendix A.

The revised educational note Discounting and Cash Flow Considerations for P&C Insurers provides additional guidance on discounting associated with premium liabilities.

Margins for Adverse Deviations (MfAD)

The SOP states that (emphasis added)

> 2250.02 *The selected margin for adverse deviations should vary*
>
> ***between premium liabilities and claim liabilities,***
>
> *among lines of business, and*
>
> *among accident years, policy years, or underwriting years, as the case may be,*
>
> *according to how those considerations so vary.*

The AA would consider different MfADs if premium liabilities and claim liabilities exhibit different levels of uncertainty. Generally, there would be more uncertainty for claims that have yet to occur such as those underlying the unearned premiums.

The educational note Margins for Adverse Deviations for Property and Casualty Insurance provides additional guidance on the selection of MfADs.

Examples

Illustrative examples of the evaluation of premium liabilities, gross and net, are presented in appendices B and C.

The key concepts discussed above are illustrated in these exhibits, including the derivation of losses and ALAE by line of business, the addition of ULAE, the estimated cash flows on a discounted basis, and the addition of provisions for adverse deviations. In the net calculation of the amount of the expected loss and ALAE, the cost of reinsurance coverage in relation to the unexpired portion of the policies in force is explicitly subtracted from the UPR before applying the expected loss ratio.

Further details regarding the calculation of the expected gross loss ratios, maintenance expenses, and discount factors are presented in appendix B, sheets 4, 5, and 6. A similar exercise would be followed for the net assumptions presented in appendix C.

These examples are for illustrative purposes only. Other approaches to estimate the various components of the policy liabilities in connection with unearned premium may be appropriate. For example, premium liabilities for a block of business that is renewing on a single date would have average payment dates different than in the examples presented.

3. Premium Deficiencies and Maximum Deferrable Policy Acquisition Expenses

The current presentation of the financial statements allows for the reporting of the premium deficiency on a net basis only. In some situations, the calculation of the equity in the gross UPR may provide valuable information that the AA may wish to discuss with management. The remainder of this section will refer to the calculation and presentation of the premium deficiency derived by assessing the equity in the net UPR.

A premium deficiency exists when the net policy liabilities in connection with unearned premium exceed the sum of net UPR and unearned (reinsurance) commissions. In this situation, a premium deficiency liability is established in the amount by which the estimated premium liabilities exceed the sum of the net UPR and unearned (reinsurance) commissions.

The maximum deferrable policy acquisition expenses are commonly referred to as the equity in the UPR. The AA is required to test the adequacy of premium liabilities in the insurer's financial statements, including all future costs arising from the unexpired portion of in-force policies. The AA may do so by considering whether the carried DPAE is less than or equal to the equity in the UPR. In the event of a carried DPAE greater than the maximum estimated, the DPAE would be reduced to the maximum estimated amount. In the event of negative equity in the UPR, the DPAE would be reduced to zero and a premium deficiency would be required.

The previous section demonstrates how the AA calculates the policy liability in connection with unearned premium. The maximum deferrable policy acquisition expenses (net) is defined as follows:

Net UPR

+ Premium deficiency

+ Unearned (reinsurance) commissions

– Net policy liabilities in connection with unearned premium

UPR, unearned (reinsurance) commissions and initial DPAE are usually provided by the insurer's accounting department.

The equity in unearned premium is usually calculated on an all lines combined basis. On an all lines combined basis, deficiencies in some lines are offset by redundancies in other lines. This approach is appropriate on an ongoing concern basis to the extent that a company's mix of business does not change significantly from year to year. It is appropriate since it is unlikely that

a company would stop writing its more profitable lines. However, the calculation can be done by line of business when segregation of different books of business is desired. In that case, it is possible to record a premium deficiency on one line of business with a partially offsetting DPAE on the other books of business.

Once the maximum deferrable policy acquisition expense is calculated it will be compared with the initial DPAE amount. If the initial DPAE is higher than the maximum deferrable, management is informed that the DPAE should be reduced to the maximum deferrable amount. In addition, any amount by which the net policy liabilities in connection with unearned premium exceed the sum of the net UPR and unearned (reinsurance) commissions would be recorded as a premium deficiency.

Example

The example in the appendices demonstrates the general calculation of the maximum policy acquisition expenses deferrable and determination of the premium deficiency on both a gross and net of reinsurance basis for a company that is required to book a premium deficiency on its balance sheet:

- Appendix B, sheets 1-3 illustrate the gross premium liabilities calculations. Although a gross premium deficiency is indicated, it is not reported on the balance sheet, however, these exhibits may still be useful for discussion with management.
- Appendix B, sheets 4-6 illustrate the supporting loss ratios, discount factor and maintenance expense ratio calculation for a given class of insurance (personal property) on a gross of reinsurance basis.
- Appendix C illustrates the net premium liabilities calculations. As seen on sheet 3, the initial DPAE would be reduced to zero in column (33) and a premium deficiency reserve, shown in column (34), would be posted equal to the amount by which the net premium liabilities exceed the sum of the net UPR and unearned (ceded) commissions.
- Appendix D shows the premium liabilities portion of the AA's Expression of Opinion based on the figures from the example.

4. Other Net Liabilities and Unearned (Reinsurance) Commissions

"Other Net Liabilities" can be grouped into two major categories: those which relate to commission adjustments, and those which relate to premium adjustments, each of which is booked as a separate accrued liability on the balance sheet.

Contingent commissions (profit sharing commissions) are commissions that insurers pay their agents or brokers based on the profitability and the volume of business of individual producers (agents/brokers). These agreements vary by company and are often established over one- to three-year periods. Some commissions may be incurred as of the statement date and may need to be accrued.

Swing-rated contracts generate premium adjustments between insurers and reinsurers which are payable based on a pre-determined target loss ratio and the actual loss ratio of the book of

business reinsured. An example of a swing-rated contract giving rise to other net liabilities is provided below:

> A reinsurance contract for a long-tail line of business incepting on October 31, 2012 has a 3 percent swing rate adjustment payable by the insurer to the reinsurer if the loss ratio exceeds 73 percent and a 3 percent swing rate adjustment payable by the reinsurer to the insurer if the loss ratio is below 67 percent. Payment is due three years following contract inception.
>
> Assuming the reinsurance premium subject to the 3 percent adjustment is $1,000,000, the maximum swing rate adjustment would be in the amount of $30,000.
>
> As at December 31, 2015 for example, the AA would evaluate the other net liabilities related to this contract. If the AA evaluates that the ultimate loss ratio subject to the reinsurance contract is 75 percent, then the other net liabilities would equal the future swing rate adjustment payable to the reinsurer of $30,000 and would be presented in the AA's opinion.

A provision for retro-rated policy liabilities is booked when insurers issue policies for which the premium is adjusted yearly based on the actual experience on the policy. The final premium is not known until all losses are reported and settled. The provision to be accrued is equal to the difference (either positive or negative) between the estimated final premium and the cumulative paid premium at the valuation date.

Other examples of premium development to be evaluated as part of the premium liabilities are the following:

- Audit premiums where the final premium is not known until the coverage expires;
- Premium development on reinsurance assumed; and
- Premium development on retro-rated reinsurance ceded.

Communication with the accounting department is needed to ensure that the AA's adjustments and the insurer's accounting policy are consistent.

The sources of development on reinsurance assumed or ceded to be considered include, but are not limited to, the following:

- Changes in subject matter premium which is usually unknown until the end of the contract period;
- Swing-rated excess of loss treaties which call for a rate adjustment based on the loss experience during the coverage period; and
- Reinstatement premium for catastrophic or other layer (additional premium to be paid when the limit of coverage provided by the layer has been exhausted unless netted from expected claims recovery).

Some insurers with large quota share treaties may have significant unearned (reinsurance) commissions on their ceded unearned premiums. The unearned (reinsurance) commissions are booked as a liability and are earned pro rata over the terms of the policies.

5. Subsequent Event Application in the Case of Premium Liabilities

A subsequent event is defined in the SOP as "an event of which an actuary first becomes aware after a calculation date but before the corresponding report date." The treatment of a subsequent event in the AA's work is described as follows:

> 1520.02 For work with respect to an entity, the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event
>
> > provides information about the entity as it was at the calculation date,
> >
> > retroactively makes the entity different at the calculation date, or
> >
> > makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event.

Subsequent events need to be analyzed in the context of claim liabilities and premium liabilities. Some subsequent events will be taken into consideration in the same manner in both claim and premium liabilities, while some events may only need to be taken into consideration in premium liabilities. For example, the educational note Subsequent Events discusses the case of the 1998 ice storm. The event occurred on January 5, 1998; it did not make the entity different at the valuation date of December 31, 1997 and therefore did not need to be recognized in claim or premium liabilities. However, it was recognized that the actual premium liabilities could be materially different from the expected premium liabilities and that this should be disclosed as a note to the financial statements.

Appendix A: Premium Liabilities Present Value Factor

Assume the following:

- Let i = discount rate used in the valuation of claims liabilities based on a cash flow model that includes consideration of any premium payment lags (e.g., monthly installment plans);
- PV_{AY} represents the present value of the future accident year losses to January 1 divided by the ultimate losses;
- PV_{UPR} represents the present value of the losses underlying the UPR to January 1 divided by the ultimate losses;
- PV represents the present value of an average loss discounted to the accident date divided by the amount of the ultimate loss;
- 0<PV≤1; and
- Assume losses are uniformly distributed and premiums are annual and evenly distributed.

$$PV_{AY} = \int_0^1 PV\,(1+i)^{-t}dt$$

where $\int_0^1 (1+i)^{-t}\,dt = \int_0^1 (1 - ti + (t)(t+1)i^2 + \cdots)\,dt$

$\approx \int_0^1 (1-ti)\,dt = 1 - i/2$

$PV_{AY} \approx PV\,[\,1 - i/2\,]$

$PV_{UPR} = \dfrac{\int_0^1 PV\,(1-t)(1+i)^{-t}dt}{\int_0^1 (1-t)dt}$

$= 2\,PV\,[\,\int_0^1 (1+i)^{-t}dt - \int_0^1 t\,(1+i)^{-t}dt\,]$

where $\int_0^1 t\,(1+i)^{-t}dt \approx \int_0^1 t\,(\,1 - ti)\;\;dt$

$$= \int_0^1 (t - t^2 i)\,dt = \left[\frac{t^2}{2} - \frac{t^3 i}{3}\right]\Bigg|_0^1 = \frac{1}{2} - \frac{i}{3}$$

$PV_{UPR} \approx 2\,PV\,[1 - \frac{i}{2} - \frac{1}{2} + \frac{i}{3}] \approx PV\,[1 - \frac{i}{3}]$

- Substituting the value of PV from above we can solve for the PV_{UPR} in terms of PV_{AY}

$$PV_{UPR} \approx PV_{AY} \frac{\left[1-\frac{i}{3}\right]}{\left[1-\frac{i}{2}\right]} \approx PV_{AY}[1+i/6\ ] \approx PV_{AY}(1+i)^{x}$$

where x = difference between the *mean* average accident date of an accident year and that of the UPR of 1/6 (i.e., 1/2 less 1/3).

If, however, the cash flow model used to derive the discount rate underlying the claim liabilities does not incorporate premium payment lags, then the following adjustment is required to the discount rate to reflect the decrease in anticipated investment income:

- Let k = the portion of the unearned premium supported by invested assets (or % of portfolio paid in full at inception) as of the valuation date;
- Let j = k x i , 0% ≤ k ≤ 100%;
- k = 100% if all policies are paid in full at inception then j = i; and
- k = 0% if all policies are on an installment payment plan then j = 0 and no additional discount is needed to the valuation date.

$$PV_{UPR} \approx PV_{AY}(1+i)^{.5}\ (1+j)^{-.33}$$

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50 ans years

Revised Educational Note

Subsequent Events

Committee on Property and Casualty Insurance Financial Reporting

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute Standards of Practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying Standards of Practice in respect of specific matters. Responsibility for the manner of application of Standards of Practice in specific circumstances remains that of the members.

MEMORANDUM

To: All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries Practising in Property and Casualty Insurance

From: Pierre Dionne, Chair
Practice Council

Julie-Linda Laforce, Chair
Committee on Property and Casualty Insurance Financial Reporting

Date: October 15, 2015

Subject: **Revised Educational Note—Subsequent Events**

The Committee on Property and Casualty Insurance Financial Reporting of the Canadian Institute of Actuaries (CIA) has revised this educational note for use by property and casualty actuaries to provide additional guidance. The purpose of this educational note is to provide guidance in identifying subsequent events and in understanding appropriate courses of action for such events. In preparing this educational note, input was sought from insurance audit professionals at Deloitte, KPMG and PricewaterhouseCoopers.

In accordance with the Institute's Policy for Due Process for the Approval of Guidance Material other than Standards of Practice, this educational note has been prepared by the Committee on Property and Casualty Insurance Financial Reporting, and has received final approval for distribution by the Practice Council on October 13, 2015. As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant educational notes and other designated educational material.*" That subsection explains further that a "practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "educational notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

If you have any questions or comments regarding this educational note, please contact Julie-Linda Laforce at julielindalaforce@axxima.ca.

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1. Introduction

The Committee on Property and Casualty Insurance Financial Reporting of the Canadian Institute of Actuaries (CIA) prepared this educational note to provide guidance to property and casualty (P&C) actuaries in identifying whether events are subsequent events and in understanding appropriate courses of action for such events. This educational note focuses on subsequent events that are relevant to the actuary performing an actuarial analysis in support of financial reporting (e.g., insurance contract liabilities valuations supporting year-end and quarterly financial statements). It relies on the CIA's current definitions and Standards of Practice related to subsequent events, and also relies extensively on definitions of the Chartered Professional Accountants of Canada (CPA Canada) and input from senior audit professionals specializing in insurance organizations.

Federal and provincial insurance acts require that the Annual Return of a P&C insurance company be accompanied by an actuarial report on the insurance contract liabilities. (Insurance contract liabilities refer to both claim liabilities and premium liabilities.) The financial statement contained within the Annual Return is to be prepared in accordance with International Financial Reporting Standards, which is one of the financial reporting frameworks included in Canadian generally accepted accounting principles (GAAP). Accordingly, accounting and actuarial standards are relevant when considering the appropriate treatment of subsequent events in financial reporting for P&C insurance companies. Key standards that deal with the treatment of subsequent events are IAS 10 *Events After the Reporting Period* in Part 1 IFRS of the CPA Canada *Handbook – Accounting* and subsection 1520 of the Standards of Practice.

This educational note begins with the definition of a subsequent event as contained in the Standards of Practice and examination of the accounting standards related to events after the reporting period, particularly the distinction between adjusting events and non-adjusting events, previously known as Type A and Type B events respectively. In considering events, a very important decision point for the actuary is materiality. Consequently, this educational note addresses materiality and refers the reader to the 2007 report from the CIA Task Force on Materiality. Next, the event decision tree is presented; this decision tree was added to the Standards of Practice in 2011 to assist actuaries in determining the appropriate course of action in response to an event.

To demonstrate the use of the event decision tree the educational note presents the following examples:

- Catastrophic event, such as Eastern Canada's January 1998 ice storm;
- Judicial decision, such as the February 2008 Alberta court decision related to the 2004 automobile reforms;
- Failure of a reinsurance company from the ceding company's perspective;
- Change in investment markets;
- Knowledge of missing claims;
- Late reported claim(s); and
- Change in insurance industry benchmarks.

The final section of this educational note focuses on communication between the actuary, company management, and the auditor at the company level as well as between our organizations at the profession level (i.e., CIA and CPA Canada). The pertinent sections of the Standards of Practice and the CPA Canada *Handbook – Accounting* are reproduced as appendices A and B, respectively.

2. Definitions and Standards of Practice

Subsection 1110 of the Standards of Practice defines a subsequent event as "an event of which an actuary first becomes aware after a calculation date but before the corresponding report date." The calculation date is defined as the "effective date of a calculation; e.g., the balance sheet date in the case of a valuation for financial statements. It usually differs from the report date." The report date is defined as the "date on which the actuary completes the report on his or her work. It usually differs from the calculation date." Finally, the term "report" refers to "an actuary's oral or written communication to users about his or her work."

Subsection 1520 of the Standards of Practice provides guidance regarding the possible effect of subsequent events on the work of actuaries. Paragraph 1520.02 states that

> . . . the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event
>
> > provides information about the entity as it was at the calculation date,
> >
> > retroactively makes the entity different at the calculation date, or
> >
> > makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event.

Since the scope of this educational note is limited to actuarial analyses supporting financial reporting, particularly in the context of annual and quarterly financial statements, the discussion focuses on the first two circumstances in the above list.

The *CPA Canada Handbook – Accounting*, Part 1 IFRS, IAS 10 *Events After the Reporting Period*, states:

> Objective
>
> 1 The objective of this Standard is to prescribe:
>
> > (a) when an entity should adjust its financial statements for events after the reporting period; and
> >
> > (b) the disclosures that an entity should give about the date when the financial statements were authorised for issue and about events after the reporting period.
>
> The Standard also requires that an entity should not prepare its financial statements on a going concern basis if events after the reporting period indicate that the going concern assumption is not appropriate.

Scope

2 This Standard shall be applied in the accounting for, and disclosure of, events after the reporting period.

Definitions

3 The following terms are used in this Standard with the meanings specified:

Events after the reporting period are those events, favourable and unfavourable, that occur between the end of the reporting period and the date when the financial statements are authorised for issue. Two types of events can be identified:

(a) those that provide evidence of conditions that existed at the end of the reporting period (*adjusting events after the reporting period*); and

(b) those that are indicative of conditions that arose after the reporting period (*non-adjusting events after the reporting period*).

4 The process involved in authorising the financial statements for issue will vary depending upon the management structure, statutory requirements and procedures followed in preparing and finalising the financial statements.

5 In some cases, an entity is required to submit its financial statements to its shareholders for approval after the financial statements have been issued. In such cases, the financial statements are authorised for issue on the date of issue, not the date when shareholders approve the financial statements . . .

6 In some cases, the management of an entity is required to issue its financial statements to a supervisory board (made up solely of non executives) for approval. In such cases, the financial statements are authorised for issue when the management authorises them for issue to the supervisory board . . .

7 Events after the reporting period include all events up to the date when the financial statements are authorised for issue, even if those events occur after the public announcement of profit or of other selected financial information.

Note that the "reporting date" in the accounting standards is equivalent to the "calculation date" in the Standards of Practice (and not the "report date").

Under IFRS, the financial statements now disclose the date the financial statements were authorized for issuance by the entity (typically the date of approval by the Board) and the auditor's report date will match that date. The actuary's report date in the financial statements would typically be the same date.

Throughout this educational note, subsequent events are referred to as adjusting events or non-adjusting events according to the descriptions in IAS 10 *Events After the Reporting Period*, paragraphs 03 a) and b), respectively. In general, accounting standards require that an entity adjusts amounts recognized in its financial statements to take into account adjusting (subsequent) events and that the notes to the financial statements include disclosure of non-adjusting (subsequent) events.

The accounting treatment of adjusting events requires that "an entity shall adjust the amounts recognised in its financial statements to reflect adjusting events after the reporting period" (IAS 10, paragraph 8). For non-adjusting events, the accounting treatment states that

> If non-adjusting events after the reporting period are material, non-disclosure could influence the economic decisions that users make on the basis of the financial statements. Accordingly, an entity shall disclose the following for each material category of non-adjusting event after the reporting period:
>
> (a) the nature of the event; and
>
> (b) an estimate of its financial effect, or a statement that such an estimate cannot be made. (IAS 10, paragraph 21).

The actuarial classification is similar to the accounting classification. Paragraph 1520.05 of the Standards of Practice states:

> . . . depending on the classification, the actuary would either
>
> take that event into account, or
>
> report that event, but not take it into account.

These two options for action are similar to the accounting guidelines for adjusting (subsequent) events (i.e., take the event into account) and non-adjusting (subsequent) events (i.e., disclosure only). Furthermore, paragraph 1520.03 states that "The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event." This is similar to the accounting requirement for non-adjusting events.

An event decision tree was added in 2011 to the Standards of Practice to assist the actuary in deciding how to reflect an event in the work, if the actuary determines that the event makes the entity different. In a financial reporting context, the event decision tree can be used to determine whether to take the event into account or to report (i.e., disclose) the event but not to take it into account. When working with the event decision tree, it is critical that the actuary keep in mind the concept of materiality.

3. Materiality

Paragraph 1340.03 of the Standards of Practice addresses the concept of materiality, in a general fashion, by stating that "an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations."

As part of an actuarial valuation of insurance contract liabilities, the actuary would determine a materiality level. The November 2007 report from the Task Force on Materiality notes that it is important to recognize what materiality is not. The report emphasizes that the concept of materiality is different from the concepts of:

- The range of reasonable values in an actuarial estimate; and

- The inherent uncertainty associated with actuarial estimates.

Subsection 1630 of the Standards of Practice, CIA/CICA Joint Policy Statement, requires communication regarding the materiality level between the actuary and the auditor. Paragraph 1630.10 states, in part:

> The enquiring professional would
>
> e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of:
>
> i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional's materiality level in accordance with applicable professional standards . . .

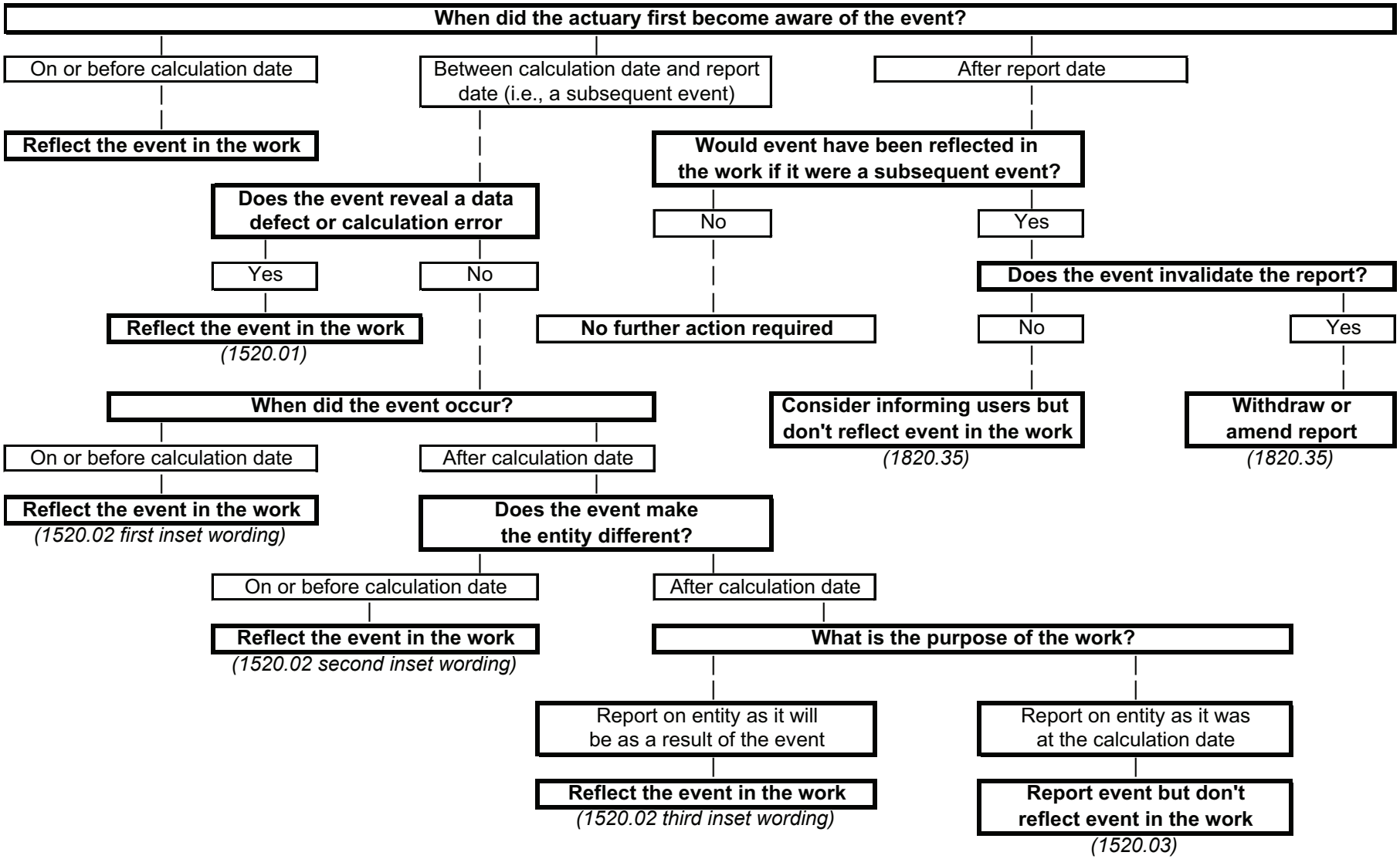
While the actuarial materiality may differ from the materiality level selected by the auditor, the actuary would be aware of the audit materiality level. Generally, the materiality level selected by the actuary for the purpose of actuarial analysis in support of financial reporting would not be greater than the materiality level selected by the auditor.

From an auditor's perspective, an adjusting event that is not material does not have to be reflected and a non-adjusting event that is not material does not require disclosure. If the actuary determines that an event is not material to the actuarial valuation of insurance contract liabilities, the actuary may not need to use the event decision tree. Nevertheless, the actuary would communicate to the auditor the details of such events since the auditor maintains various materiality thresholds. While actuarial standards may not require the actuary to change his or her analysis, the auditor may nevertheless have to consider the effect of the event.

4. Event Decision Tree

The next page presents the event decision tree from the Standards of Practice for determining the appropriate course of action in respect of a potential subsequent event. Actuaries may use this decision tree in the analysis of subsequent events for both claim liabilities and premium liabilities. As noted previously, when working with the event decision tree, it is critical that the actuary keep in mind the concept of materiality.

EVENT DECISION TREE



Upon discovery of a potential subsequent event, the first question that the actuary would consider is when he or she obtained knowledge of the event.

4.1. Knowledge On or Before Calculation Date

According to the Standards of Practice, a subsequent event is an event of which an actuary first becomes aware after a calculation date but before the corresponding report date. Thus, if the actuary becomes aware of the event on or before the calculation date, the event is not a subsequent event and the actuary treats the event similarly to other information used in the valuation process.

4.2 Knowledge Between Calculation Date and Report Date

Events that occur between the calculation date and the report date are, by definition, subsequent events. If the actuary becomes aware of the subsequent event between the calculation date and the report date, the next question along the event decision tree is whether or not the event reveals a data defect or calculation error.

4.2.1 Data Defect or Calculation Error

Errors can arise in the data provided by the insurer for the analysis or in the actuary's assumptions, calculations, and/or methodology. It is important to remember that the actuary's judgment about materiality pervades virtually all work and affects the actuary's decisions at all steps of the decision-making. If it is determined that the event exceeds the actuary's materiality level and is the result of an error, then the actuary would make the appropriate correction (i.e., reflect the event in the work) and communicate the revised insurance contract liabilities estimate to both management of the insurer and the auditor. Correction and communication of a data defect or calculation error is required regardless of whether the error was discovered before or after the report date.

Paragraph 1520.01 of the Standards of Practice states, "The actuary should correct any data defect or calculation error that is revealed by a subsequent event." As part of the Classification portion of subsection 1520, the Standards of Practice reiterates that it is the actuary's responsibility to correct errors. Paragraph 1520.05 states, "The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those which reveal errors . . ."

4.2.2 No Data Defect or Calculation Error

If the subsequent event does not reveal a data defect or calculation error, the next question the actuary asks is, "When did the event occur?"

4.2.2.1 On or Before the Calculation Date

The action to this branch of the event decision tree is similar to that described in section 4.1. The event is not classified as a subsequent event, and the actuary treats the event similarly to other information used in the valuation process.

4.2.2.2 After Calculation Date

If the event occurred after the calculation date, then the next question is related to the timing of when the entity becomes different. The two options in the event decision tree are: (1) on or before calculation date, and (2) after calculation date.

The response to this question is linked to the auditors' classification of an event as an adjusting event or a non-adjusting event.

Adjusting (subsequent) events, which the accounting standards define as events that provide evidence of conditions that existed at the end of the reporting period, require the actuary to recalculate the insurance contract liabilities, both claim liabilities and premium liabilities, at the calculation date. In the context of the decision tree, these events would therefore be ones that make the entity different on or before calculation date. The actuary would then report the recalculated insurance contract liabilities to management and the auditor for incorporation into the financial statements.

Non-adjusting (subsequent) events, which the accounting standards define as events that are indicative of conditions that arose after the reporting period, require disclosure rather than change to the balance sheet and income statement. In the context of the decision tree these events make the entity different after the calculation date and the purpose of the work is to report on the entity as it was at the calculation date. The actuary would nevertheless recalculate the insurance contract liabilities so that management can include appropriate values in the necessary disclosures; however, the insurance contract liabilities reported in the financial statements would remain unchanged.

In conclusion, if the event makes the entity different on or before the calculation date, then the actuary reflects the event in his or her work. If the event makes the entity different after the calculation date, then in the context of financial reporting, a disclosure in the financial statement would be required.

As mentioned previously in section 2, the scope of this educational note is limited to actuarial analysis supporting financial reporting and therefore does not address subsequent events which make the entity different after the calculation date and where the purpose of the work is to report on the entity as it will be as a result of the event.

4.3 After Report Date

If the actuary becomes aware of the event following the report date, the event, by definition, is not a subsequent event. Nevertheless, the event could trigger three possible actions depending on the type of event and the magnitude of the effect of the event. The actuary may: (1) take no action, (2) inform users but not change the work, or (3) withdraw or amend the report.

The first question the actuary asks upon discovering an event after the report date is, "Would the event have been reflected in the work if it were a subsequent event?" If the answer to this question is no, then no further action is required by the actuary. If the answer is yes, the actuary considers whether or not the event invalidates the report. To invalidate the report, the event would either reveal a data defect or a calculation error, provide additional information about the entity which is the subject of the report as that entity was at the calculation date, retroactively make that entity different at the calculation date, or make that entity different

after the calculation date and a purpose of the work was to report on the entity as it would be as a result of the information. If the event does not invalidate the report, then the actuary would consider informing the user(s) but does not have an obligation to reflect the event in the work. For purposes of actuarial work that supports financial reporting, the auditor would expect to be informed by the actuary, particularly since the auditor would need independently to evaluate the effect of the event on the audit opinion. If the event does invalidate the actuary's report, then the actuary would withdraw or amend his or her report.

5. Disclosure Requirements

Company management is ultimately responsible for the notes to the financial statements. However, following a non-adjusting (subsequent) event, the actuary often plays an important role in determining the estimates of insurance contract liabilities that are contained in such notes.

The actuary's responsibility for disclosure with respect to subsequent events, both adjusting events and non-adjusting events, extends beyond simply the financial statements. Depending on the circumstances of the subsequent event, the actuary has varied means of communication. The actuary may present his or her findings orally through meetings with company management and/or presentations to the audit committee or the board of directors. The actuary would also include commentary regarding the subsequent event in written communication either in the actuary's report or separate communication specifically addressing the subsequent event.

The February 1998 CIA educational note The Eastern Canada Ice Storm – Treatment in Financial Reporting included the following points for consideration for actuarial disclosure:

- A description of the nature of the event; and
- An estimate of the financial effect, when possible, or a statement that such an estimate cannot be made, including:
  - An estimate of the gross amount of claims (indemnities and loss adjustment expenses);
  - An estimate of the reinsurance recoveries;
  - An estimate of the reinsurance reinstatement premiums; and
  - A discussion about the impact of the event
    - On future insurance results of the entity;
    - On reinsurance risk of non-recovery from reinsurers; and
    - Other related events.

6. Examples

In order to illustrate the concepts described above, the following examples are analyzed using the event decision tree:

- Catastrophic event, such as Eastern Canada's January 1998 ice storm;
- Judicial decision, such as the February 2008 Alberta court decision related to the 2004 automobile reforms;

- Failure of a reinsurance company from a ceding company's perspective;
- Change in investment markets;
- Knowledge of missing claims;
- Late reported claim(s);
- Change in incurred value of a large loss; and
- Change in insurance industry benchmarks.

These examples are for illustrative purposes only. This list is not meant to be exhaustive. It is important to recognize that other types of subsequent events could affect insurance contract liabilities. The course of action following an actual event will depend on each insurer's circumstances and the particular characteristics of the event itself. Unless stated otherwise in each example, the event is considered to be material to the insurer.

6.1 Catastrophic Event

The first example refers to the January 1998 ice storm in Eastern Canada. Depending on the geographical distribution of exposures, the financial effects of the ice storm may or may not have been material to a particular insurer. For many insurers with exposures in Eastern Canada, the financial effect of the ice storm was greater than the selected actuarial materiality level for the December 31, 1997, insurance contract liabilities valuation.

When did the actuary first become aware of the event?

The actuary would compare the date he or she became aware of the event to the calculation date. For this example, the calculation date for most insurers was December 31, 1997. The ice storm did not begin until January 5, 1998; therefore, actuaries did not know of the event before the calculation date (i.e., December 31, 1997). Since the ice storm occurred so early in January, for most actuaries knowledge of the event developed before the report date. Thus, the actuary proceeds along the middle branch of the event decision tree.

Does the event reveal a data defect or calculation error?

For the ice storm, the answer to this question is no.

When did the event occur?

The ice storm did not begin until January 5, 1998, which was after the calculation date of December 31, 1997.

Does the event make the entity different?

In February 1998, the CIA published an educational note titled The Eastern Canada Ice Storm – Treatment in Financial Reporting to provide guidance on the reporting of this event. The educational note concluded that:

> The ice storm clearly does not retroactively make the insurance company different . . . Accordingly, the ice storm is an event that makes an entity different after the balance sheet date.

What is the purpose of the work?

The educational note concluded that

> If the purpose is to report on the entity as it was, then the actuary would not take the event into account in the selection of methods and assumptions . . .
>
> the actuary should report the event, making no further distinction on the nature and amount of the event, once the materiality hurdle has been passed, and it has been determined that it is not appropriate to amend methods and assumptions.

Both actuarial and accounting guidance are consistent in indicating that the appropriate course of action is to disclose the effect of the ice storm in the notes to the financial statements, but to make no changes to the calculations underlying the 1997 results.

The educational note also addressed the issue of premium liability.

> It is clear that the actual premium liability will likely be larger than the premium liability anticipated as at December 31, 1997. However, this is not the key issue in the context of financial reporting under GAAP. The key issue is the purpose of the work, which is to report on the insurance company as it was on December 31, 1997.

6.2 Judicial Decision

This example uses the 2008 judicial decision related to automobile insurance reforms in Alberta. In February 2008, Alberta's Court of Queen's Bench struck down the $4,000 cap on non-pecuniary damages for people who suffer soft-tissue injuries in car accidents.

For insurers doing business in Canada but without a significant portfolio of Alberta automobile insurance, the court decision was not material and no action was required. For some insurers with significant exposures in Alberta, the court decision was still not material due to the methods for setting individual case reserves, the proportion of bodily injury claims in their current portfolio of outstanding claims, or because a provision had already been established. Even if there were no changes in actuarial calculations, many auditors required an affirmative statement from the actuary regarding the non-material impact of the Alberta court decision. For many insurers, however, the effect of the court decision was greater than the actuarial materiality level.

In certain circumstances, the question of materiality may lead the actuary to conclude that no action is required according to the Standards of Practice, but significant industry-wide events may, in practice, require the actuary to provide a statement for financial reporting purposes regardless of materiality. This statement may require a quantification of the effect on the insurance contract liabilities or a disclosure in the notes to financial statements.

When did the actuary first become aware of the event?

For most insurers, the calculation date in this example was December 31, 2007. Thus, since the court decision occurred on February 8, 2008, the answer to the first question is that actuaries became aware of the event after the calculation date.

Unlike the Eastern Canada ice storm, the court decision occurred in early February, not early January. Some insurers had already held their audit committee meetings. Some actuaries had already prepared their actuarial statements of opinion regarding insurance contract liabilities even though their actuarial report on insurance contract liabilities had not yet been issued.

There was extensive discussion between actuaries and auditors, both at the individual company level and at the industry level, as to what constitutes a report date. Is the report date the date of:

- The audit committee meeting to approve the financial statements;
- The actuarial statement of opinion;
- The actuarial report; or
- The auditor's report on the financial statements (auditor's report date)?

The general consensus of the auditors was that the report date was the date of the auditor's report on the financial statements. According to the Standards of Practice, the actuarial report date is defined as the "date on which the actuary completes the report on his or her work." There may be situations, such as Canadian branches, where the actuary's report date is prior to the auditor's report date. In the unusual circumstance of a significant event occurring after the actuary's report date and before the auditor's report date, the actuary and auditor will be expected to coordinate and decide upon necessary action.

Between Calculation Date and Report Date

Actuaries who became aware of the court decision prior to the report date would proceed along the middle branch of the event decision tree. The Alberta court decision was not related to a data defect or calculation error. Since the event occurred after the calculation date, the next question for the actuary who became aware of the court decision prior to the report date would be, "Does the event make the entity different?" While the conclusions were not consistent among all auditing firms and all insurers, most classified the Alberta court decision as an adjusting event, an event that provided further evidence of conditions that existed at the December 31, 2007 financial statement date. For an adjusting (subsequent) event, the actuary would take into account the effect of such an event in the calculation of the insurance contract liabilities at the calculation date. The accounting classification as an adjusting event aligns with the event decision tree branch "the event makes the entity different on or before calculation date."

After Report Date

For actuaries who became aware of the Alberta court decision after the report date, the event is not classified as a subsequent event (according to paragraph 1110.49 of the Standards of Practice). They would answer the question: "Would the event have been reflected in the work if it were a subsequent event?" The answer to this question typically was yes. Thus, the final decision for actuaries was whether or not the event invalidated the report.

For some insurers with significant exposures in Alberta, the court decision did, in fact, invalidate the report. In these situations, actuaries had the option of withdrawing the December 31, 2007, insurance contract liabilities valuation report or amending it. For other insurers without a significant portfolio of Alberta automobile insurance, the court decision was not sufficiently material to invalidate the report. Therefore, many actuaries informed users in the financial notes but did not reflect the event in their work. The decision-making process was based on discussions between the actuary, the company management, and the auditor and depended upon the specific circumstances of each company.

6.3 Failure of a Reinsurance Company from the Ceding Company's Perspective

The failure of an insurer's reinsurer is cited in subsection 1520, Subsequent Events, of the Standards of Practice as an example of a situation where the classification is not clear. Paragraph 1520.16 states:

> If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the insolvency, then the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, then it provides information about a change in conditions which makes the entity different after the calculation date.

The example in this educational note assumes that the failure of the reinsurer is not due to the occurrence of a catastrophe but instead the gradual deterioration in the entity's financial condition.

When did the actuary first become aware of the event?

This example assumes that the actuary becomes aware of the failure on January 15, which is after the calculation date of December 31 but before the report date. Thus, by definition the failure of the reinsurer is a subsequent event. Given that the actuary becomes aware of the event between the calculation date and the report date, the actuary uses the middle branch of the event decision tree.

Does the event reveal a data defect or calculation error?

The failure of the reinsurer is not considered an error in data, assumptions, calculations, and/or methodology.

When did the event occur?

Assume that the failure of the reinsurer occurred during the first week of January, which is after the calculation date of December 31. (Note, if the assumption was that the reinsurer failure occurred during the last week of December, the actuary would not treat the failure as a subsequent event and would incorporate the effect of the failure into his or her analysis.)

Does the event make the entity different?

This question is likely the most challenging for the actuary to answer. The response to this question determines whether or not the effect of the event is to be reflected in the work (i.e., included in the calculations of insurance contract liabilities) or only reported (i.e., included in disclosure). The response to this question determines whether the event is an adjusting or a non-adjusting (subsequent) event as defined by Canadian accounting standards.

Based on a review of the excerpt from the Standards of Practice initially cited in this example as well as the CPA Canada definition of an adjusting event, i.e., an event that provides evidence of conditions that existed at the end of the reporting period, the failure of the reinsurer is classified as an adjusting event and is taken into account in the insurance contract liabilities valuation by the actuary. The actuary would work in concert with the insurance company financial management as well as with the auditor to confirm the response to this final question.

6.4 Change in Investment Markets

This example assumes a precipitate drop in the stock market that occurs during the first week of January along with a reduction in fixed income yields. Paragraph 1520.16 of the Standards of Practice also cites this example as a situation in which the classification is not clear. It states, in part:

> For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent accounting period.

Different actuaries could come to different conclusions. When the situation is unclear, we suggest that the actuary discuss the issue with the auditor for further guidance.

When did the actuary first become aware of the event?

The drop in the stock market and investment yields occurs during the first week of January, which is after the calculation date of December 31. Since the change in the investment environment occurred in the first week of January, the assumption is that the actuary became aware of the event before the report date. The change in investment markets is considered a subsequent event since the actuary became aware of the event after the calculation date and before the report date. The actuary once again uses the middle branch of the event decision tree to determine whether and how to reflect the event in his or her work.

Does the event reveal a data defect or calculation error?

The drop in the stock market and investment yields is not an error in data, assumptions, calculations, and/or methodology.

When did the event occur?

The drop in the stock market and investment yields occurs during the first week of January, which is after the calculation date of December 31.

Does the event make the entity different?

As noted in the previous example, this last question represents one of the most challenging questions for the actuary. The CPA Canada standards define non-adjusting events as those events that are indicative of conditions that arose after the reporting period. Paragraph 11 of the *CPA Canada Handbook – Accounting*, Part 1 IFRS, IAS 10 *Events After the Reporting Period*, states:

> An example of a non-adjusting event after the reporting period is a decline in fair value of investments between the end of the reporting period and the date when the financial statements are authorised for issue. The decline in fair value does not normally relate to the condition of the investments at the end of the reporting period, but reflects circumstances that have arisen subsequently. Therefore, an entity does not adjust the amounts recognised in its financial statements for the investments. Similarly, the entity does not update the

amounts disclosed for the investments as at the end of the reporting period, although it may need to give additional disclosure under paragraph 21.

The appropriate course of action, according to CPA Canada standards, is to disclose the effect of the decline in fair value of the investments but not to take account of the event in the calculation of insurance contract liabilities as at December 31.

6.5 Knowledge of Missing Claims

This example assumes that the actuary receives notice on August 5 that the June 30 claims database, which the actuary is using to perform a second-quarter insurance contract liabilities valuation, does not include data from a particular group of claims.

When did the actuary first become aware of the event?

August 5 (the date on which the actuary was informed of the missing claims) is after the calculation date of June 30 but before the report date. Thus, this example initially proceeds down the middle branch of the event decision tree.

Does the event reveal a data defect or calculation error?

This event represents an omission (i.e., an error) in the data provided by the insurer. Since the answer to this question is yes, there is only one course of action: a corrected analysis. As stated in paragraph 1520.01 of the Standards of Practice, "The actuary should correct any data defect or calculation error that is revealed by a subsequent event."

It is important for the actuary to recognize that an error in data, assumptions, calculations, and/or methodology that is greater than the materiality level requires correction, even if correcting the error yields an estimate that is still within the range of reasonable values of the auditor.

Lack of Clarity in What Constitutes the Event

In this example, it is unclear whether the event is the late notice of the missing claims, which occurred in August (between June 30 calculation date and report date), or the actual claims themselves which occurred prior to the calculation date of June 30. The conclusion that the data is to be incorporated into the June 30 analysis is reached regardless of whether the actuary proceeds down the first or second branch of the event decision tree. If the event refers to the dates of the missing claims that occurred before the calculation date, then according to the event decision tree, the missing data are not treated as a subsequent event and the claims data are incorporated into the analysis. If the event refers to the actuary's knowledge of the missing claims, the actuary proceeds along the middle branch and responds affirmatively to the question about a data defect or calculation error.

If the omission of data is discovered on August 16, which is usually after the report date, the event is not classified as a subsequent event and the actuary would proceed down the third branch of the event decision tree. The actuary would answer the question: "Would the event have been reflected in the work if it were a subsequent event?" The answer to this question is typically yes. The final decision would be whether or not the event invalidated the report. As stated in paragraph 1820.33 of the Standards of Practice, the report would be invalidated if the

event reveals a data defect or a calculation error. This event represents a data defect and thus the report would be invalidated.

6.6 Late Reported Claim(s)

Lags in reporting of claims activity often occur for reinsurers. Several weeks, and sometimes months, can elapse between the time the ceding company increases a case reserve and the excess notice is received by the reinsurer. This example assumes that for year-end reserving purposes, the reinsurer's actuary relies on all notices received by December 29 from its ceding companies. Furthermore, it is assumed that the reinsurer receives notice on January 12 of a November 20 increase in case reserve from a three-year old claim that now exceeds the primary retention by more than $10 million.

When did the actuary first become aware of the event?

The actuary became aware of the event on January 12, which is after the calculation date of December 31 but before the report date. Thus, by definition this is a subsequent event.

Does the event reveal a data defect or calculation error?

It is important to recognize that the late reported claim in this example differs from the missing claims in the previous example. The late reported claim of the reinsurer is not classified as an error. Reinsurers routinely rely on data as of December 31 and receive updated claims information from brokers or ceding companies on new claims or case reserve changes occurring in December in early to mid-January. Thus, this example differs from the group of claims that were inadvertently excluded from the claims database in the missing claims example.

When did the event occur?

The increase in case reserve occurred on November 20, which is before the calculation date of December 31. According to the event decision tree, since the event (i.e., the increase in case reserve) occurred before the calculation date, the actuary would reflect the event in the work.

If the increase in case reserve occurred in early January instead, this event would be a subsequent event that would have occurred after the calculation date. According to the event decision tree, the event would then be a non-adjusting subsequent event as it makes the entity different after the calculation date and the actuary would disclose its impact in the report.

6.7 Change in Incurred Value of a Large Loss

This example assumes that the actuary receives notice on February 5 that the previously reported losses experienced a large change in value (large loss event). The change in value was recorded in the insurance claims database in mid-January.

When did the actuary first become aware of the event?

February 5 (the date on which the actuary was informed of the change in incurred value) and mid-January (the date on which the incurred value was recorded in the claims database) are both after the calculation date of December 31 but before the report date. Thus, this example proceeds down the middle branch of the event decision tree.

Does the event reveal a data defect or calculation error?

Change in incurred value is not considered an error in data, assumptions, calculations, and/or methodology. It is part of the normal course of business of insurer.

When did the event occur?

The change in incurred value occurred after the calculation date of December 31. (Note, if the change in value was in the last week of December, the actuary would reflect the actual value in the contract liabilities valuation.)

Does the event make the entity different?

In this situation, the entity is different after the calculation date. Knowledge of the change in incurred value was only known and recorded after the calculation date of December 31.

The actuary would assess whether the change in incurred value of the large loss even though in excess of its standard of materiality is foreseen as normal in the course of business and whether the loss development component of its Incurred but Not Reported (IBNR) exceeds the change in incurred value. In situations where the IBNR is sufficient, the actuary would deem the event as part of the normal course of business and not disclose the impact in its actuary's report.

In an opposite situation when the IBNR would not be sufficient to absorb the change in incurred value of the large loss, the actuary may consider this event as a non-adjusting subsequent event and disclose the impact of its value in its report. Disclosure would also be communicated to the auditors.

It is also worth noting that the same conclusion would apply whether the change in incurred value of a large loss has a positive or a negative impact on the contract liabilities.

6.8 Change in Insurance Industry Benchmarks

Paragraph 1520.07 of the Standards of Practice states, in part:

> Examples of subsequent events that provide information about an entity as it was at the calculation date are
>
> > publication of an experience study which provides information for selection of assumptions . . .

This final example assumes that the actuary is working for a relatively new company that does not yet have a reliable, credible database for development of actuarial assumptions for reserving purposes. Thus, the actuary relies on insurance industry benchmark information for the selection of loss development patterns and expected loss ratios for this company. Furthermore, the example assumes that the industry's statistical agency releases new industry development data on July 15. In this situation, is the actuary required to analyze the new industry data for the purpose of conducting a June 30 reserve valuation, which the company uses for financial reporting purposes?

When did the actuary first become aware of the event?

July 15, the date at which the actuary became aware of the new industry data, is after the June 30 calculation date. Thus, the actuary proceeds down the middle branch of the event decision tree.

Does the event reveal a data defect or calculation error?

The release of new industry benchmarks is not considered a data defect or calculation error.

When did the event occur?

The event is the availability of new industry data. The new data became available July 15, which is after the June 30 calculation date.

Does the event make the entity different?

It is typically not expected that the release of new industry benchmarks would make the entity different. Generally, industry benchmark patterns, particularly loss development patterns, do not change dramatically from release to release. Since actuaries review the experience of multiple years when selecting benchmarks based on industry data, the addition of one year is not usually expected to change the actuary's assumptions drastically. However, if the industry data are used for the selection of trend rates or expected loss ratios, changes in industry experience could be more significant, and the effect on selected assumptions could be material. It is incumbent upon the actuary to verify that the new industry information would not have a material effect on the estimate of insurance contract liabilities for the company.

It is expected that in most circumstances, the actuary would conclude that the effect of the subsequent event is unlikely to be material. Thus, in most circumstances, the actuary would not be required to incorporate the latest industry data in his or her calculations on that basis.

7. Communication Between Actuaries, Company Management, and Auditors

Strong communication between the actuary, company management, and the auditor is critical, particularly with respect to subsequent events. Subsection 1630 of the Standards of Practice, CIA/CICA Joint Policy Statement, requires communication regarding subsequent events between the actuary and the auditor. Paragraph 1630.10 states, in part:

> The enquiring professional would:
>
> e) make the responding professional aware of the enquiring professional's needs. This would include a discussion of . . .
>
> ii) subsequent events, to determine that the responding professional understands how they are to be treated and that he or she will consider the effect of matters that come to his or her attention up to the date of his or her report.

Therefore, the actuary would review the treatment of subsequent events with the auditor as well as with company management and consider the specific circumstances of the insurance company to ensure that the treatment is appropriate for the entity and that the audit and actuarial approaches are consistent.

The November 2007 report from the CIA Task Force on Materiality states: "An important part of knowing the user in communications between the actuary and the auditor may also be to understand what constitutes a material subsequent event to the accountant user who is also the preparer of general purpose public financial statements."

Following a subsequent event that has the potential to affect many organizations in the insurance industry, the CIA and CPA Canada will also play a role in facilitating discussions and

decision making as to how to classify the event. Two examples of such events are the Eastern Canada ice storm in January 1998 and the Alberta court decision in February 2008. The discussions at the industry level, however, are not a substitute for discussion at the individual company level.

Appendix A

CIA Standards of Practice, 1520 Subsequent Events

.01 The actuary should correct any data defect or calculation error that is revealed by a subsequent event.

.02 For work with respect to an entity, the actuary should take a subsequent event into account (other than in a pro forma calculation) if the subsequent event

provides information about the entity as it was at the calculation date,

retroactively makes the entity different at the calculation date, or

makes the entity different after the calculation date and a purpose of the work is to report on the entity as it will be as a result of the event.

.03 The actuary should not take the subsequent event into account if it makes the entity different after the calculation date and a purpose of the work is to report on the entity as it was at the calculation date. Nevertheless, the actuary should report that subsequent event. [Effective December 1, 2002]

Classification

.04 A subsequent event is relevant to the recommendation if it reveals an error, provides information about the entity, or is a decision that makes the entity different.

.05 The actuary would correct an error revealed by a subsequent event. The actuary would classify each subsequent event other than those which reveal errors and, depending on the classification, the actuary would either

take that event into account, or

report that event, but not take it into account.

Definitive and virtually definitive decisions

.06 A definitive decision means a final and permanent decision that is not tentative, provisional, or unsettled. It would be evidenced by an amendment to a benefits plan, a collective bargaining agreement, a binding exchange of letters between two contracting parties, a court order, a legislative bill that has been proclaimed, or the like. A virtually definitive decision is one that is virtually certain to become definitive, but that lacks one or more formalities like ratification, due diligence, regulatory approval, third reading, royal assent, or proclamation. However, a decision that still involves discretion at an executive or administrative level is not virtually definitive.

Entity

.06.1 Examples of entities are

the pension plan, in the case of an actuary doing a valuation of a pension plan,

the block of annuity business, in the case of an actuary calculating the insurance contract liabilities for an insurance company's annuity business,

a combination of the pension plan and the member's specific data, in the case of the determination of a member's individual entitlement under a pension plan, and

the insurance company, in the case of an actuary valuing the insurance contract liabilities of an insurance company.

Event provides information about entity as it was or retroactively makes entity different

.07 Examples of subsequent events that provide information about an entity as it was at the calculation date are

publication of an experience study that provides information for selection of assumptions,

reporting to an insurer of a claim that was incurred on or before the balance sheet date, and

adoption of a pension plan amendment prior to the calculation date of which the actuary becomes aware after the calculation date.

.08 Repealed

.09 Repealed

.10 Examples of events that retroactively make the entity different at the calculation date are definitive or virtually definitive decisions, made after the calculation date but effective on or before the calculation date, to

wind-up a pension plan, partially or fully,

sell a portion of a participating employer's business and consequently to spin-off the corresponding members from the participating employer's pension plan,

amend the benefits of a pension plan,

transfer a portion of an insurer's policies to another insurer, or

invoke a judicial decision that nullifies or significantly modifies the law affecting insurance claims.

.11 If an event provides information about the entity as it was at the calculation date or provides information that retroactively makes the entity different at the calculation date, the effect of the subsequent event on the work is the same as if the actuary first became aware of the information on or before the calculation date and the actuary would not report the event as a subsequent event. That is, the actuary would report the event only to the extent that the event would have been reported had the actuary first become aware of the information before the calculation date.

.12 Repealed

Event makes entity different after

.13 If the subsequent event makes the entity different after the calculation date, then the purpose of the work determines whether or not the actuary takes the event into account.

.14 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it will be as a result of the event, then the actuary would take that event into account and would describe it in reporting.

.15 If the subsequent event makes the entity different after the calculation date and the purpose of the work is to report on the entity as it was at that date, then the actuary would not take that event into account but would report the event since it would affect the entity's future operations and the actuary's subsequent calculations.

Classification not clear

.16 The classification of a subsequent event may be unclear, at least a priori, although the circumstances of the case and the actuary's engagement may make it clear. The following are examples of such events.

a precipitous fall in the stock market. For financial reporting, one can argue that the stock market crash provides additional information about the entity as it was at the calculation date, because the crash is an indicator of the outlook for common share investments at that date; alternatively, one can argue that the crash makes the entity different only after the calculation date since it creates a new situation. The new situation would be reflected in the financial statements for the subsequent accounting period.

a salary freeze for employees who are members of a pension plan. If the salary freeze is a correction of excessive salaries, then it provides additional information about the entity as it was at the calculation date, because the freeze is an indicator of the outlook for salaries at the calculation date. If the salary freeze deals with a recent problem, then it indicates a change in conditions that makes the entity different after the calculation date. In either case, the actuary would consider the effect of the freeze on the employees' pension benefits. It may be that the freeze will have a lasting effect. Alternatively, it may be that the freeze will be compensated for by higher salaries later on, so that the salary inflation assumption based on historical trends continues to be valid.

default on a bond. If the default was the culmination of a gradual deterioration in its issuer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the default, then the default provides additional information about the entity as it was at the calculation date. If the default was precipitated by a catastrophe, then it provides information about a change in conditions that makes the entity different after the calculation date.

insolvency of an insurer's reinsurer. This is similar to default on a bond. If the insolvency was the culmination of a gradual deterioration in the reinsurer's financial circumstances, most of which had occurred before the calculation date but which was not apparent until revealed by the insolvency, then the insolvency provides information about the entity as it was at the calculation date. If the insolvency was precipitated by a catastrophe, then it provides information about a change in conditions that makes the entity different after the calculation date.

.17 Repealed

Reporting

.18 Sometimes the actuary may consider it appropriate, or the terms of the work may require the actuary, to report an alternative and opposite calculation; i.e., an alternative calculation that does not take the subsequent event into account when the main calculation does, or that takes the subsequent event into account when the main calculation does not. For example, in a province for which the calculation date for a pension valuation following marriage breakdown is the date of separation, a subsequent event may be the early retirement of the plan member at some time between the calculation date and the report date. The actuary would consider reporting values assuming that this subsequent event had been an established intention at the calculation date, instead of or in addition to retirement scenarios otherwise recommended in the practice-specific standards. In such cases, the actuary would make the same calculations regardless of the purpose of the work but the reporting thereof would depend on the purpose of the work.

Appendix B

CPA Canada Handbook – Accounting: IAS 10 Events After the Reporting Period

Objective

1 The objective of this Standard is to prescribe:

(a) when an entity should adjust its financial statements for events after the reporting period; and

(b) the disclosures that an entity should give about the date when the financial statements were authorised for issue and about events after the reporting period.

The Standard also requires that an entity should not prepare its financial statements on a going concern basis if events after the reporting period indicate that the going concern assumption is not appropriate.

Scope

2 **This Standard shall be applied in the accounting for, and disclosure of, events after the reporting period.**

Definitions

3 **The following terms are used in this Standard with the meanings specified:**

***Events after the reporting period* are those events, favourable and unfavourable, that occur between the end of the reporting period and the date when the financial statements are authorised for issue. Two types of events can be identified:**

(a) those that provide evidence of conditions that existed at the end of the reporting period (*adjusting events after the reporting period*); and

(b) those that are indicative of conditions that arose after the reporting period (*non-adjusting events after the reporting period*).

4 The process involved in authorising the financial statements for issue will vary depending upon the management structure, statutory requirements and procedures followed in preparing and finalising the financial statements.

5 In some cases, an entity is required to submit its financial statements to its shareholders for approval after the financial statements have been issued. In such cases, the financial statements are authorised for issue on the date of issue, not the date when shareholders approve the financial statements.

Example

The management of an entity completes draft financial statements for the year to 31 December 20X1 on 28 February 20X2. On 18 March 20X2, the board of directors reviews the financial statements and authorises them for issue. The entity announces its profit and selected other financial information on 19 March 20X2. The financial statements are made available to shareholders and others on 1 April 20X2. The shareholders approve the financial statements at

their annual meeting on 15 May 20X2 and the approved financial statements are then filed with a regulatory body on 17 May 20X2.

The financial statements are authorised for issue on 18 March 20X2 (date of board authorisation for issue).

6 In some cases, the management of an entity is required to issue its financial statements to a supervisory board (made up solely of non executives) for approval. In such cases, the financial statements are authorised for issue when the management authorises them for issue to the supervisory board.

Example

On 18 March 20X2, the management of an entity authorises financial statements for issue to its supervisory board. The supervisory board is made up solely of non-executives and may include representatives of employees and other outside interests. The supervisory board approves the financial statements on 26 March 20X2. The financial statements are made available to shareholders and others on 1 April 20X2. The shareholders approve the financial statements at their annual meeting on 15 May 20X2 and the financial statements are then filed with a regulatory body on 17 May 20X2.

The financial statements are authorised for issue on 18 March 20X2 (date of management authorisation for issue to the supervisory board).

7 Events after the reporting period include all events up to the date when the financial statements are authorised for issue, even if those events occur after the public announcement of profit or of other selected financial information.

Recognition and measurement

Adjusting events after the reporting period

8 **An entity shall adjust the amounts recognised in its financial statements to reflect adjusting events after the reporting period.**

9 The following are examples of adjusting events after the reporting period that require an entity to adjust the amounts recognised in its financial statements, or to recognise items that were not previously recognised:

(a) the settlement after the reporting period of a court case that confirms that the entity had a present obligation at the end of the reporting period. The entity adjusts any previously recognised provision related to this court case in accordance with IAS 37 *Provisions, Contingent Liabilities and Contingent Assets* or recognises a new provision. The entity does not merely disclose a contingent liability because the settlement provides additional evidence that would be considered in accordance with paragraph 16 of IAS 37.

(b) the receipt of information after the reporting period indicating that an asset was impaired at the end of the reporting period, or that the amount of a previously recognised impairment loss for that asset needs to be adjusted. For example:

(i) the bankruptcy of a customer that occurs after the reporting period usually confirms that a loss existed at the end of the reporting period on a trade receivable and that the entity needs to adjust the carrying amount of the trade receivable; and

(ii) the sale of inventories after the reporting period may give evidence about their net realisable value at the end of the reporting period.

(c) the determination after the reporting period of the cost of assets purchased, or the proceeds from assets sold, before the end of the reporting period.

(d) the determination after the reporting period of the amount of profit-sharing or bonus payments, if the entity had a present legal or constructive obligation at the end of the reporting period to make such payments as a result of events before that date (see IAS 19 *Employee Benefits*).

(e) the discovery of fraud or errors that show that the financial statements are incorrect.

Non-adjusting events after the reporting period

10 **An entity shall not adjust the amounts recognised in its financial statements to reflect non-adjusting events after the reporting period.**

11 An example of a non-adjusting event after the reporting period is a decline in fair value of investments between the end of the reporting period and the date when the financial statements are authorised for issue. The decline in fair value does not normally relate to the condition of the investments at the end of the reporting period, but reflects circumstances that have arisen subsequently. Therefore, an entity does not adjust the amounts recognised in its financial statements for the investments. Similarly, the entity does not update the amounts disclosed for the investments as at the end of the reporting period, although it may need to give additional disclosure under paragraph 21.

Dividends

12 **If an entity declares dividends to holders of equity instruments (as defined in IAS 32 *Financial Instruments: Presentation*) after the reporting period, the entity shall not recognise those dividends as a liability at the end of the reporting period.**

13 If dividends are declared after the reporting period but before the financial statements are authorised for issue, the dividends are not recognised as a liability at the end of the reporting period because no obligation exists at that time. Such dividends are disclosed in the notes in accordance with IAS 1 *Presentation of Financial Statements*.

Going concern

14 **An entity shall not prepare its financial statements on a going concern basis if management determines after the reporting period either that it intends to liquidate the entity or to cease trading, or that it has no realistic alternative but to do so.**

15 Deterioration in operating results and financial position after the reporting period may indicate a need to consider whether the going concern assumption is still appropriate. If the going concern assumption is no longer appropriate, the effect is so pervasive that this Standard

requires a fundamental change in the basis of accounting, rather than an adjustment to the amounts recognised within the original basis of accounting.

16 IAS 1 specifies required disclosures if:

(a) the financial statements are not prepared on a going concern basis; or

(b) management is aware of material uncertainties related to events or conditions that may cast significant doubt upon the entity's ability to continue as a going concern. The events or conditions requiring disclosure may arise after the reporting period.

Disclosure

Date of authorisation for issue

17 **An entity shall disclose the date when the financial statements were authorised for issue and who gave that authorisation. If the entity's owners or others have the power to amend the financial statements after issue, the entity shall disclose that fact.**

18 It is important for users to know when the financial statements were authorised for issue, because the financial statements do not reflect events after this date.

Updating disclosure about conditions at the end of the reporting period

19 **If an entity receives information after the reporting period about conditions that existed at the end of the reporting period, it shall update disclosures that relate to those conditions, in the light of the new information.**

20 In some cases, an entity needs to update the disclosures in its financial statements to reflect information received after the reporting period, even when the information does not affect the amounts that it recognises in its financial statements. One example of the need to update disclosures is when evidence becomes available after the reporting period about a contingent liability that existed at the end of the reporting period. In addition to considering whether it should recognise or change a provision under IAS 37, an entity updates its disclosures about the contingent liability in the light of that evidence.

Non-adjusting events after the reporting period

21 **If non-adjusting events after the reporting period are material, non-disclosure could influence the economic decisions that users make on the basis of the financial statements. Accordingly, an entity shall disclose the following for each material category of non-adjusting event after the reporting period:**

(a) the nature of the event; and

(b) an estimate of its financial effect, or a statement that such an estimate cannot be made.

22 The following are examples of non-adjusting events after the reporting period that would generally result in disclosure:

(a) a major business combination after the reporting period (IFRS 3 *Business Combinations* requires specific disclosures in such cases) or disposing of a major subsidiary;

(b) announcing a plan to discontinue an operation;

(c) major purchases of assets, classification of assets as held for sale in accordance with IFRS 5 *Non-current Assets Held for Sale and Discontinued Operations*, other disposals of assets, or expropriation of major assets by government;

(d) the destruction of a major production plant by a fire after the reporting period;

(e) announcing, or commencing the implementation of, a major restructuring (see IAS 37);

(f) major ordinary share transactions and potential ordinary share transactions after the reporting period (IAS 33 *Earnings per Share* requires an entity to disclose a description of such transactions, other than when such transactions involve capitalisation or bonus issues, share splits or reverse share splits all of which are required to be adjusted under IAS 33);

(g) abnormally large changes after the reporting period in asset prices or foreign exchange rates;

(h) changes in tax rates or tax laws enacted or announced after the reporting period that have a significant effect on current and deferred tax assets and liabilities (see IAS 12 *Income Taxes*);

(i) entering into significant commitments or contingent liabilities, for example, by issuing significant guarantees; and

(j) commencing major litigation arising solely out of events that occurred after the reporting period.

Effective date

23 An entity shall apply this Standard for annual periods beginning on or after 1 January 2005. Earlier application is encouraged. If an entity applies this Standard for a period beginning before 1 January 2005, it shall disclose that fact.

Withdrawal of IAS 10 (revised 1999)

24 This Standard supersedes IAS 10 *Events After the Balance Sheet Date* (revised in 1999).

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Report

Materiality

Task Force on Materiality

October 2007

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Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Memorandum

To: All Fellows, Affiliates, Associates and Correspondents of the Canadian Institute of Actuaries

From: Jacques Tremblay, Chairperson
Practice Council

Jacqueline Friedland, Chairperson
Task Force on Materiality

Date: October 31, 2007

Subject: **Report – Materiality**

This report was developed by the Task Force on Materiality of the Canadian Institute of Actuaries (CIA) for discretionary use by actuaries. Its purpose is to assist Canadian actuaries in considering various aspects of materiality as they provide professional services to their principals.

In accordance with the Institute's Policy on Due Process for Approval of Practice-Related Material other than Standards of Practice, this report has been unanimously approved by the Task Force on Materiality and has received final approval for distribution by the Practice Council on October 10, 2007.

If you have any questions or comments regarding this report, please contact Jacqueline Friedland at jfriedland@kpmg.ca.

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1. PREFACE

This report was developed by the Task Force on Materiality of the Canadian Institute of Actuaries (CIA) for discretionary use by actuaries. Its purpose is to assist Canadian actuaries in considering various aspects of materiality as they provide professional services to their principals. Concepts in this document are broadly applicable to actuaries conducting valuation, pricing, reserving and financial modeling analyses in all practice areas (including life, health, pension, and property/casualty).

This document serves as a first step in the development of Canadian-based literature on the topic. The last section of the document highlights issues that we believe are important for further research and discussion. The task force hopes to promote discussion of materiality within the entire Canadian actuarial profession. We are hopeful that, over time, such discussions might lead to the evolution of revised CIA Standards of Practice (SOP) and generally accepted practices regarding materiality in Canada.

Task force reports represent the views of the task force and do not necessarily represent the views of the CIA. Members should be familiar with task force reports. These reports do not constitute SOP and therefore are not binding. These reports may or may not be in compliance with SOP. Responsibility for the manner of application of SOP in specific circumstances remains that of the members in the various practice areas (i.e., life, health, pension, and property/casualty).

This document relies to a great extent on the American Academy of Actuaries (AAA) Discussion Paper titled "Materiality – Concepts on Professionalism" issued in 2006. We acknowledge the combined efforts of members of both the CIA and the AAA and their contributions to the research, analysis, and composition of this document. Members should note that the professional rules of the CIA differ from the corresponding codes of conduct of the AAA and that the differences might impose different professional obligations on the CIA member than on the AAA member.

The Task Force on Materiality presents these ideas with the expectation that they will be both useful and thought-provoking and will enhance the Canadian actuarial profession's consideration of aspects of materiality in professional practice. Ultimately, it is the SOP that governs the responsibilities of actuaries in this area. However, the ideas and suggestions offered in this document are intended to assist actuaries in applying the SOP to their individual situations. The task force believes that expanded discussion of the concepts and suggestions offered in this document will benefit the profession.

2. PURPOSE AND SCOPE

This document is intended to stimulate thinking and discussion about materiality in the CIA. The purpose is not only to build upon what exists in the current SOP and what has already occurred in the property/casualty practice area but also to extend the discussion into other practice areas. The task force hopes to promote discussion of materiality within the entire Canadian actuarial profession. We are hopeful that, over time, such discussions might lead to the evolution of revised SOP and generally accepted practices regarding materiality in Canada.

Concepts in this document are broadly applicable to all practice areas (including life, health, pension, property/casualty). The considerations set forth here also apply to all

actuarial work, including that done by actuaries employed by an insurance company or other entity, as well as by consulting actuaries in assignments for their clients.

By sharing the thoughts of several experienced actuaries, the task force encourages each actuary to give appropriate consideration to the concepts and suggestions contained in this document. Ultimately, however, each actuary must decide how to fulfill professional responsibilities in this area according to current SOP.

In this respect, CIA members should take note of the fact that the Rules of the CIA refer directly to the concept of what is *material* in Rule 13. Rule 13 states: "A member shall comply with the procedures set out in Annotation 13-1 if the member becomes aware of any apparent material noncompliance by another member with the Rules or with the standards of practice."

Much of the contents of this document relate to how the professional services of the CIA member are viewed by the users of professional services. Members should take note of their professional obligations under Rule 6 (Control of Work Product). Annotation 6-1 states: "Material prepared by a member may be used by another party in a way that may influence the actions of a third party. The member should recognize the risks of misquotation, misinterpretation or other misuse of such material and should take reasonable steps to ensure that the material is clear and presented fairly, and that the member is identified as the source of the material."

CIA members should also consider the onus placed on them by Annotation 1-2 which states that "It is the professional responsibility of the member not to be associated with anything which the member knows or should know is false or misleading." This document on materiality points out that it is the judgment of how information prepared by the actuary might affect the user's decision making or the user's reasonable expectations that is the key concept underlying materiality.

3. BACKGROUND

The concept of materiality is central to the reporting and interpretation of financial information. Loosely defined as "importance," the question of whether or not something is "material" means, quite literally, whether or not it matters to the **user** of the information. When related to financial information, the question of materiality arises in the context of inclusion (whether or not an item needs to be considered), in the context of refinement (whether or not a number is accurate enough to convey its intended message), and in the context of disclosure (whether or not a fact needs to be reported).

Accountants have long recognized the issue of materiality and its role in the reporting of financial information. They have defined the concept in both qualitative and quantitative terms, although judgment, by necessity, plays a significant role as well. However, while the concept of materiality is of no less importance to the actuary's work than it is to the accountant's, and while the term and related concepts are pervasive in the actuarial literature, there is very little professional guidance for the actuary seeking to evaluate what is and what is not material – what does and does not matter – in a particular situation.

Materiality is a critical element of financial reporting for insurance contracts, employee benefit plans, and other financial instruments for which actuaries provide professional

services. Actuaries' clients and employers, as well as other interested persons, may not always understand the differences between materiality from an accounting perspective, from their personal perspective, and materiality as it is understood and used by actuaries. Moreover, actuaries working in different practice areas may address materiality somewhat differently, and the guidance on materiality available to actuaries from organizations other than the CIA differs among the various practice areas.

Paragraph 1340.03 of the SOP, Materiality, states that ""Material" has its ordinary meaning, but judged from the point of view of a user, having regard for the purpose of the work." While there is a current SOP related to materiality, many members of the CIA have expressed an interest in further guidance on the topic.

The CIA determined that it would be helpful to develop a document offering non-binding guidance on materiality. Therefore, the CIA's Practice Council established the task force to prepare a document for broad dissemination to the membership. The purpose of the document is not to impose any new or revised requirements to the existing SOP, but to identify issues, enhance awareness, and assist actuaries and others toward a clearer understanding of the topics addressed in this document.

4. DEFINING MATERIALITY

Paragraph 1340.03 of the SOP contains the following generalized description of the concept of materiality:

> …an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations.

Most descriptions of materiality emphasize that an omission or misstatement is material if the judgment of a *reasonable person* would have been changed or influenced by the inclusion or correction of the item, given *surrounding circumstances*.

The reader may find it helpful to keep this in mind when reading this document. Further discussion of the description of materiality appears in the next section, "Reflecting Upon Materiality: User is Key."

In understanding what materiality is, it is also important to recognize what materiality is not. The task force wishes to emphasize that the concept of materiality is different from the concepts of:

- the range of reasonable values in an actuarial estimate; and
- the inherent uncertainty associated with actuarial estimates.

Sources of discussion to which actuaries have access include:

- actuarial and accounting guidance from other countries and from International Standards on Auditing;
- Actuarial Standards of Practice (ASOP) of the American Academy of Actuaries (AAA);
- Canadian Institute of Chartered Accountants (CICA);
- Financial Accounting Standards Board (FASB);

- International Accounting Standards Board (IASB);
- National Association of Insurance Commissioners (NAIC) Financial Examiners' Handbook and Accounting Practices and Procedures Manual;
- Practice and Educational Notes of actuarial societies;
- Securities and Exchange Commission (SEC);
- US Federal and state courts;
- Valuation, Finance and Investment Committee (VFIC) of the Casualty Actuarial Society (CAS).

In the Appendix, we include a wide range of extracts from relevant literature to assist actuaries in their consideration of materiality.

Throughout this document, SOP refers to the Standards of Practice promulgated by the CIA, and ASOP refers to the Standards of Practice of the AAA. This document contains references to the Standards of Practice of both organizations due to the participation of members from both organizations in the research and development of the document.

5. REFLECTING UPON MATERIALITY: USER IS KEY

Subsection 1340 of the SOP provides a generalized description of "materiality." This document does not seek to propose a universal definition of materiality for actuarial purposes. We preferred to focus on applying judgment about materiality. We were somewhat startled at the strong emphasis of the Merriam-Webster OnLine dictionary's definition of "material - having real importance or great consequences" – and in particular the word "great." Upon reading this definition, one immediately responds "to whom?"

User perspective is typically the key element in materiality determinations. In applying judgment to determine how to address materiality, the actuary normally focuses on the purpose of the work and its intended user(s). The definitions in the Appendix at the end of this document collectively appear to send the message: "know your user." However, this is sometimes more difficult than it may seem, since it is quite common for actuarial work products to be used, in one way or another, by indirect users about whom the actuary cannot possibly be knowledgeable. Indeed, different users (including unintended users) may have different expectations regarding materiality.

In section 1800 of the SOP Reporting, the focus is on external user reports and internal user reports. The issue of intended and unintended users is not specifically addressed in the SOP. The ASOP 41 does address this specific issue. ASOP 41 states that the actuary is not responsible to unintended users with whom they did not intend to communicate. Notwithstanding the presence or absence of a specific SOP, actuaries may be found to retain some responsibility to assure that a report is not misused or misapplied by all users of the work product as stated in CIA Annotation 6-1 on Control of Work Product.

Having decided upon the selected materiality level for a particular assignment, the actuary might be well advised to test it by asking rhetorically "would my users come to a different conclusion or a different decision if I used some other materiality level?" Then

we immediately encounter the difficulty referred to above, i.e., the actuary cannot possibly be knowledgeable about all indirect users.

ASOP No. 41, *Actuarial Communications* provides an approach to resolve this difficulty. Section 2.5 thereof defines "intended audience" as "The persons to whom the actuarial communication is directed and with whom the actuary, *after discussion with the principal* (emphasis added), intends to communicate." The rest of the definition makes it clear that, unless otherwise agreed, the principal is always part of the intended audience, and gives examples of others (such as regulators, policyholders and plan participants) who may be designated by the principal, with consent of the actuary, as members of the intended audience.

Section 2.6 of ASOP No. 41 defines "other user" as "Any user of an actuarial communication who is not a principal or member of the intended audience." This framework provides valuable protection for the actuary, who is entitled to be in control at all times regarding the intended audience and therefore cannot be taken by surprise by the existence of "other users" about whom the actuary is ignorant. Note too that Section 3.5.2 of ASOP No. 41 provides that there is no obligation for the actuary to communicate with any person other than the intended audience. We recognize that ASOP are not binding on members of the CIA who are not also members of the AAA.

SOP Section 1800 Reporting requires the actuary to ensure that the form and content of the actuarial reporting are clear and appropriate to the particular circumstances. SOP paragraph1820.14 states: "Description of the purpose of the work and its users permits another person to assess its appropriateness to his or her needs and may thereby avoid unintended use of the work." Consequently, by taking due care as to who is included as part of the intended audience, the actuary is able to apply informed judgment in arriving at the selected materiality level. For example, if policyholders are included, then the actuary should have due regard of the fact that policyholders, in general, are likely to be less sophisticated than the actuary's principal, regulators or investors.

In summary, the actuary who prepares the work (the "preparer") is expected to take reasonable steps to ensure that the work does not mislead the intended users of the work. An evaluation of whether this threshold is met should consider: the intended users, their knowledge, and their situations. A clear statement by the preparer of both the intended users of the work product and the intended uses of the work product is a valuable tool to focus the attention of the preparer on what may be material.

6. CONSIDERATIONS IN THE DETERMINATION OF MATERIALITY

Paragraph 1340.02 states in part:

> Judgment about materiality pervades virtually all work and affects the application of nearly all standards.

The appropriate degree of rigor in establishing or communicating the selected materiality level for a particular assignment may vary depending upon the needs, skill, sophistication, and experience of the intended audience for the actuary's work. The Appendix at the end of this document contains numerous references as to how the selected materiality level might conceivably affect the user's decision-making or reasonable expectations.

Materiality tends to be more task-specific than practice-specific. For example, we expect there to be more similarities in applying judgment about materiality to valuation type work among the various practice areas (life, health, pension, property/casualty) than we would when applying such judgment to valuation type work and product/rate development work within the same practice area.

Perhaps understandably, in light of regulatory scrutiny and the sophistication of users of actuarial work involving policy liabilities valuations as well as mergers and acquisitions transactions, actuaries in Canada appear to have more experience in applying judgment about materiality in the context of valuation work (used here to include not only statement reserves and merger/acquisition work but also portfolio transfers) than has been the case when setting rates. Nevertheless, the concepts of materiality are also applicable in product/rate development work.

There currently exists a difference in practice among actuaries with respect to the establishment of single or multiple materiality levels. Some actuaries develop a separate materiality level for data that is generally much smaller than the materiality level for the organization in total. For example, an actuary may choose a $25,000 materiality level for data and a $5 million materiality level for the organization's total policy liabilities. The more common practice, however, is the selection of a single materiality level.

Returning to the user focus and the generalized description of materiality contained in subsection 1340 of the SOP, unless there are good reasons, an actuary would generally select one materiality level for a particular actuarial task or assignment, and there would not be separate materiality levels identified for data and the overall actuarial analysis. Although it may be appropriate to identify a separate "tolerance level" as a threshold for accuracy and completeness of data, this concept is separate from the matter of materiality and would not normally be referred to or labeled as a selected materiality level.

In the normal course of events, an actuary generally would not change the materiality level significantly from year to year or valuation to valuation. However, as an organization approaches a threshold or some external benchmark, an actuary may well choose to consider changing the approach or the degree of rigor applied when determining materiality. For example, if an insurance company is close to breaching regulatory action levels, many actuaries would agree that there are likely to be good grounds for changing the selected level of materiality.

In summary, when determining materiality, the user will want to keep in mind the following considerations frequently cited in discussions on materiality:

- The materiality level should be related to the purposes and intended uses of the work. The actuary should understand which financial values are usually important for the intended uses. For example:
    - For regulatory or solvency issues, the materiality level is typically related to statutory surplus or the solvency benchmark ratio;
    - For appraisal work, the materiality level is generally related to net worth, net income, or earnings per share;

    - For DCAT work, the materiality level is expected to be less rigorous than for valuation work;
    - For general purpose financial statement work, the materiality level is generally related both to net income and net capital (or net surplus);
    - Exclusive reliance on quantitative benchmarks is inappropriate. A quantitative rule-of-thumb may be a starting point, but it must be reviewed to take into account the purpose of the work and the individual entity's circumstances.
- The materiality level is also expected to vary according to other characteristics of the entity including but not limited to the:
    - Size of the entity;
    - Entity's access to capital;
    - Stage of organizational life cycle;
    - Type of business (e.g., multi-line vs. single line, personal lines vs. commercial lines);
    - Net retention.

The materiality level will also vary according to the financial strength of the entity. In particular, paragraph 1340.04 of the SOP states: "The standard of materiality for work involving a threshold…would become more rigorous as the entity approaches that threshold."

7. ACCOUNTING VS. ACTUARIAL MATERIALITY

As noted in the "Defining Materiality" section of this document, an actuary selects an appropriate materiality level based on his or her professional judgment as to the magnitude of an omission, understatement or overstatement that would cause the user to reach a different conclusion or follow a different course of action. An accountant or auditor working for the same entity would presumably base his or her selection of the materiality level on similar criteria. Some actuaries would argue that, at least in theory, the materiality level selected by the actuary would normally be close to that selected by the accountant or auditor given that the report was prepared for financial reporting purposes.

An important consideration for the "preparer" actuary to bear in mind might be that the "user" auditor is also a "preparer" of the general purpose financial statements. While the direct users of an appointed actuary's report might be relatively sophisticated regulatory and auditing professionals, the "preparer" actuary should also consider how the auditor might use the report in communicating with the ultimate, less sophisticated, general purpose financial statement user.

According to SOP subsection 1630 CIA/CICA Joint Policy Statement (effective October 1, 2007), communication regarding materiality is expected between the actuary and the auditor. Paragraph 1630.10(e) states:

> "The enquiring professional would:
>
> …make the responding professional aware of the enquiring professional's needs. This would include a discussion of:
>
> (i) the application of the concept of materiality to determine that the responding professional will be using a materiality level that is appropriate in relation to the enquiring professional's materiality level in accordance with applicable professional standards…"

As a practical matter, however, accountants and auditors may select a materiality level without first communicating with the actuary. For example, auditors of an insurance company attest to the existence and value of assets on the one hand (large numbers that are usually comparable with reserves, at least in the aggregate) and premium data and expenses on the other (which, by contrast, tend to be relatively smaller numbers, especially at the policy or contract level). Auditors may not always use the same materiality level when making these two attestations.

Good communication between the actuary and the auditor (for which specific guidance is offered in SOP Sections 1620 Auditor's Use of an Actuary's Work and 1630 CIA/CICA Joint Policy Statement) is likely to lead to selection of appropriate materiality levels by both actuary and auditor. If such materiality levels are not the same, good communication would facilitate the discussion of any differences with the intended audience.

An important part of knowing the user in communications between the actuary and the auditor may also be to understand what constitutes a material subsequent event to the accountant user who is also the preparer of general purpose public financial statements.

8. COMMUNICATION AND DISCLOSURE

Throughout this document, the main factor underlying the selection of a materiality level has been the impact on the user. It would normally be in the user's interest to be aware of the materiality level selected and used by the actuary. Accordingly, it seems reasonable that the actuary would usually at least consider some disclosure regarding the materiality level within the actuarial work product.

However, this consideration must also take into account the complexity of the concept of materiality, the potential importance of the concept to the user, as well as the sophistication of the user who will be receiving the work product. In some cases, it may be apparent that any discussion of the materiality level is likely to give rise to misunderstanding and confusion. In other cases, full disclosure of the materiality level selected, as well as the rationale behind the selection, may be appropriate.

According to paragraphs 1820.07 and 1820.08 of the SOP:

> Appropriate description and disclosure in a report strike a balance between too little and too much. Too little deprives the user of needed information. Too much may exaggerate the importance of minor matters, imply a diminution of the actuary's responsibility for the work, or make the report hard to read.

> The appropriate criterion for description and disclosure is the question: what qualitative and quantitative information best serves the user's understanding and decision-making?

While subsection 1630 of the SOP, CIA/CICA Joint Policy Statement, requires communication regarding materiality between the actuary and the auditor, subsection 1340, Materiality, does not currently require disclosure of the selected materiality level. In actuarial work other than policy liabilities valuations and dynamic capital adequacy testing, it is currently left to the actuary's professional judgment as to whether disclosure of the materiality level is appropriate for the user's understanding of the actuarial work product, and to determine the nature and scope of appropriate disclosure under the circumstances.

According to paragraph 1340.03, "If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of the risk of using the work for a different purpose with a more rigorous standard of materiality." This approach will mitigate some of the actuary's concerns towards unintended users who would use different materiality levels for their respective purposes. Observance of Section 1340 is made more likely if the intended users of the work product and uses of the work product are enumerated in the actuarial work product.

9. AREAS FOR FURTHER RESEARCH AND DISCUSSION

This document is intended to be a first step in an ongoing process of research and discussion on the topic of materiality. In preparing this introductory document, particular attention was paid to features of the Rules, Standards, and Statements applicable to members of the CIA. The task force has identified the following issues for further investigation and discussion:

- How does materiality relate to the range of reasonable results in an actuarial estimate?
- How does materiality relate to the inherent uncertainty associated with an actuarial estimate?
- Whether examples of the application of materiality in a variety of situations should be provided?
- Is there an impact on materiality if each and every assumption must stand on its own?
- Should the actuary treat materiality differently in an internal user report?
- Should the discussion on actuaries and auditors be expanded upon?

- With respect to communication:
  - Should the actuary consider not only disclosure about materiality but also the application of materiality?
  - What communication is required if there is no written report?

The task force presents the above list of items to be considered for example purpose only and not to limit future efforts.

APPENDIX A

HELPFUL REFERENCES REGARDING MATERIALITY

Peter D. Arthur, CA, CIA Open Forum #21: Unresolved Issues in Standards of Practice

> A misstatement or the aggregate of all misstatements in financial statements is considered to be material if, in the light of surrounding circumstances, it is probable that the decision of a person who is relying on the financial statements and who has a reasonable knowledge of the business and economic activities would be changed or influenced by the misstatement or the aggregate of all misstatements.

ASOP No. 5, Incurred Health and Disability Claims

2.8 Material – Resulting in an impact, significant to the interested parties, on the affected actuarial incurred claim estimate."

ASOP No. 17, Expert Testimony by Actuaries

2.7 Material – An item is material if it has an impact on the affected actuarial opinion, which is significant to the interested parties."

ASOP No. 36, Statements of Actuarial Opinion regarding Property/Casualty Loss and Loss Adjustment Expense Reserves

Although the ASOP itself applies only to property/casualty work of a particular kind, Section 3.4 of the ASOP contains some useful ideas for action in all practice areas that actuaries may wish to consider when selecting standards of materiality. The section is reproduced here in full.

3.4 Materiality – In evaluating materiality within the context of a reserve opinion, the actuary should consider the purposes and intended uses for which the actuary prepared the statement of actuarial opinion. The actuary should evaluate materiality based on professional judgment, materiality guidelines or standards applicable to the statement of actuarial opinion and the actuary's intended purpose for the statement of actuarial opinion. The actuary should understand which financial values are usually important to the intended uses of the statement of actuarial opinion and how those financial values are likely to be affected by changes in the reserves and future payments for losses and loss adjustment expenses. For example, materiality might be evaluated in terms of the specified reserve amount for which an opinion is being given. For a statement of actuarial opinion for an insurance company to be used for financial reporting to insurance regulators, materiality might be evaluated in terms of the company's reported statutory surplus. As another example, for a statement of actuarial opinion to be used for an actuarial appraisal of an insurance company, it might be appropriate to evaluate materiality in terms of both the company's net worth and annual net income, since both values are usually important factors in assessing the value of the company.

ASOP No. 41, Actuarial Communications

2.5 Intended Audience—The persons to whom the actuarial communication is directed and with whom the actuary, after discussion with the principal, intends to communicate. Unless otherwise specifically agreed, the principal is always a member of the intended audience. In addition, other persons or organizations, such as regulators, policyholders, plan participants, investors, or others, may be designated by the principal, with consent of the actuary, as members of the intended audience.

2.6 Other User—Any user of an actuarial communication who is not a principal or member of the intended audience.

3.1.2 Form and Content—The actuary should take appropriate steps to ensure that the form and content of the actuarial communication are clear and appropriate to the particular circumstances, taking into account the intended audience. To accomplish these actuarial communication objectives, the actuary should consider whether such actuarial communication should be made in an actuarial report. Factors to consider in making such a determination include the complexity of the actuarial engagement or assignment; the actuary's perception of the significance of the actuarial findings; and relevant communication guidance in other ASOPs. Information included in previous actuarial communications that are available to the intended audience may be incorporated by reference, by the actuary, into an actuarial communication issued under this standard.

3.5.2 No Obligation to Communicate with Other Users—Nothing in this standard creates an obligation for the actuary to communicate with any person other than the intended audience.

Paragraph 1340.02 through to 1340.06 of the SOP

1340.02 Judgment about materiality pervades virtually all work and affects the application of nearly all standards. The words "materiality" and "material" seldom appear in the standards, but are understood throughout them. For example, the recommendation that approximation is appropriate if it does not affect the result means that it does not **materially** affect the result.

1340.03 Material" has its ordinary meaning, but judged from the point of view of a user, having regard for the purpose of the work. Thus, an omission, understatement, or overstatement is material if the actuary expects it materially to affect either the user's decision making or the user's reasonable expectations. Usually, however, the user does not specify a standard of materiality, so the judgment falls to the actuary. That judgment may be difficult for one or more of these reasons:

> The standard of materiality depends on how the user uses the actuary's work, which the actuary may be unable to foresee. If practical, the actuary would discuss the standard of materiality with the user. Alternatively, the actuary would report the purpose of the work as precisely as possible, so that the user is warned of

the risk of using the work for a different purpose with a more rigorous standard of materiality.

The standard of materiality may vary among users. The actuary would choose the most rigorous standard of materiality among the users.

The standard of materiality may vary among uses. For example, the same accounting calculations may be used for a pension plan's financial statements and the financial statements of its participating employer. The actuary would choose the more rigorous standard of materiality between those two uses.

The standard of materiality depends on the user's reasonable expectations, consistent with the purpose of the work. For example, advice on winding-up a pension plan may affect each participant's share of its assets, so there is a conflict between equity and practicality. Similarly for advice on a policyholder dividend scale.

1340.04 The standard of materiality also depends on the work and the entity which is the subject of that work. For example:

A given dollar standard of materiality is more rigorous for a large than for a small entity.

The standard of materiality for valuation of an insurer's policy liabilities is usually more rigorous for those in its financial statements than for those in a forecast in dynamic capital adequacy testing.

The standard of materiality for data is more rigorous for determining an individual benefit (such as in a pension plan wind-up) than for a valuation of a group benefits plan (such as a going-concern valuation of a pension plan's liabilities).

The standard of materiality for work involving a threshold, such as a regulatory capital adequacy requirement calculation of an insurer or a statutory minimum or maximum funding level for a pension plan would become more rigorous as the entity approaches that threshold.

1340.05 The actuary would not report an immaterial deviation from a particular recommendation or other guidance in the standards except if doing so assists a user to decide if the standard of materiality is appropriate for that user.

1340.06 The recommendation applies to both calculation and reporting standards.

Judicial Application of Materiality Levels

The following excerpts have been selected from a sampling of cases in which the courts have defined materiality in the context of financial statements.

SEC v. Price Waterhouse, 797 F.Supp. 1217, 1237 (S.D.N.Y., 1992).

"Materiality is defined in the accounting literature as '[t]he magnitude of an omission or misstatement of accounting information that, in light of surrounding circumstances, makes it probable that the judgment of a reasonable person would have been changed or influenced by the omission or misstatement.' (citation omitted) While the literature reflects that the 5 to 10 percent range relied on by the Commission is 'useful' (citation omitted), that literature also makes clear that there are no generalized standards for determining the materiality of a particular 'judgment item' (citation omitted), because a materiality decision is a qualitative one requiring consideration by an accountant of a wide range of information factors including, *inter alia*, the nature of the item under consideration; whether it arises from a routine or abnormal transaction; the size of the enterprise; and the company's financial condition and trends in profitability. (citation omitted) Moreover, FAS Con 2 explicitly states that '[m]agnitude by itself, without regard to the nature of the item and the circumstances in which the judgment has to be made, will not generally be a sufficient basis for a materiality judgment.'" (citation omitted)

Delta Holdings, Inc. v. National Distillers and Chemical Corp., 945 F.2d 1226, 1242 (C.A.2 (N.Y.), 1991).

"The applicable legal standard regarding the materiality of omitted information is whether 'there is a substantial likelihood that a reasonable shareholder would consider it important' or 'a substantial likelihood that the disclosure…would have been viewed by the reasonable investor as having significantly altered the total mix of information made available.'" (citation omitted)

Hudson v. General Dynamics Corp., 118 F.Supp.2d 226, 249 (Conn., 2000).

"This determination [of materiality] is . . . based on whether there is a substantial likelihood that the misrepresentation would mislead a reasonable employee in making an adequately informed decision about if and when to retire. (citation omitted) [There are] a number of factors to consider when determining materiality, including 'how significantly the statement misrepresents the present status of internal deliberations regarding future plan changes; the special relationship of trust and confidence between the plan fiduciary and beneficiary; whether the employee was aware of other information or statements from the company tending to minimize the importance of the misrepresentation or should have been so aware, taking into consideration the broad trust responsibilities owed by the plan administrator to the employee and the employee's reliance on the plan administrator for truthful information.'" (citation omitted)

FASB Statement of Financial Accounting Concepts No. 2, "Qualitative Characteristics of Accounting Information"

FASB Statement No. 2 generally provides that quantitative and qualitative factors should both be considered when determining materiality. It further states that FASB has long emphasized that materiality cannot be reduced to a numeric formula. "The predominant

view is that materiality judgments can properly be made only by those who have all the facts. The Board's present position is that no general standards of materiality could be formulated to take into account all the considerations that enter into an experienced human judgment." Additionally, FASB Statement No. 2 provides that "Magnitude by itself, without regard to the nature of the item and the circumstances in which the judgment has to be made, will not generally be a sufficient basis for a materiality judgment."

The omission or misstatement of an item in a financial report is material if, in the light of surrounding circumstances, the magnitude of the item is such that it is probable that the judgment of a reasonable person relying upon the report would have been changed or influenced by the inclusion or correction of the item.

International Accounting Standard 1, "Presentation of Financial Statements"

"Omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions of users taken on the basis of the financial statements. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor."

International Accounting Standards

"Users are assumed to:

- Have a reasonable knowledge of business and economic activities and accounting and a willingness to study the information in the financial statements with reasonable diligence;
- Understand that financial statements are prepared and audited to levels of materiality and that there is a relationship between the level of materiality used and the cost and timing of the audit;
- Recognize the uncertainties in the measurement of amounts based on the use of estimates, judgment and the consideration of future events;
- Make reasonable economic decisions on the basis of the information in the financial statements.

The determination of materiality, therefore, takes into account how users with such characteristics could reasonably be expected to be influenced in making economic decisions.

- When determining materiality in audits of financial statements or other historical financial information, prepared for a special purpose, the auditor considers the needs of specific users in the context of the objective of the engagement.
- Materiality is determined without regard to the degree of inherent uncertainty associated with the measurement of particular items. For example, the fact that the financial statements include very large provisions with a high degree of estimation uncertainty (e.g., provisions for insurance claims in the case of an insurance company, oil rig

decommissioning costs in the case of an oil company, or more generally, legal claims against an entity) does not cause the auditor to determine the materiality level for the financial statements to be higher than for financial statements that do not include such inherent estimation uncertainties."

Proposed International Standard on Auditing 320 (Revised)

Materiality in Planning and Performing an Audit

Materiality in the Context of an Audit

5. The auditor's consideration of materiality is a matter of professional judgment, and is affected by the auditor's perception of the financial information needs of users of the financial statements. For the purposes of the audit, the auditor is concerned with misstatements, including omissions, which could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements. In this context, it is reasonable for the auditor to assume that users:

   (a) Have a reasonable knowledge of business and economic activities and accounting and a willingness to study the information in the financial statements with reasonable diligence;

   (b) Understand that financial statements are prepared and audited to levels of materiality;

   (c) Recognize the uncertainties inherent in the measurement of amounts based on the use of estimates, judgment and the consideration of future events; and

   (d) Make reasonable economic decisions on the basis of the information in the financial statements.

6. Furthermore, the auditor's consideration of materiality is based on the common financial information needs of users as a group; the auditor does not consider the possible effect of misstatements on specific individual users, whose needs may vary widely.

7. Materiality depends on the size and nature of the misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor.

Use of Benchmarks in Determining Materiality

11. Determining what is material to users of the financial statements requires the exercise of professional judgment. The auditor often applies a percentage to a chosen benchmark as a starting point in determining a materiality level for the financial statements as a whole.

12. When identifying an appropriate benchmark, the auditor has regard to factors such as:

    - The elements of the financial statements (e.g., assets, liabilities, equity, income, expenses);
    - Whether there are items on which the attention of the users of the particular entity's financial statements tends to be focused (e.g., for the

purpose of evaluating financial performance users may tend to focus on profit, revenue or net assets);

- The nature of the entity, where the entity is at in its life cycle, and the industry and economic environment in which the entity operates;
- The size of the entity, nature of its ownership and the way it is financed (e.g., if an entity is financed solely by debt rather than equity, users may put more emphasis on assets, and claims on them, than on the entity's earnings); and
- The relative volatility of the benchmark.

14. Having identified an appropriate benchmark, the auditor identifies relevant financial data to be used in determining materiality. The auditor ordinarily considers prior periods' financial results and financial positions, the period-to-date financial results and financial position, and budgets or forecasts for the current period, taking account of significant changes in the circumstances of the entity (e.g., a significant business acquisition) and relevant changes of conditions in the industry or economic environment in which the entity operates. For example, when the auditor, as a starting point, determines materiality for a particular entity based on a percentage of profit before tax from continuing operations, circumstances that give rise to an exceptional decrease or increase in such profit may lead the auditor to conclude that materiality is more appropriately determined using a normalized profit before tax from continuing operations figure based on past results.

Documentation

26. The auditor should document:

(a) The materiality level for the financial statements as a whole;

(b) The materiality level for a particular class of transactions, account balance or disclosure, if applicable;

(c) The amount (or amounts) determined for purposes of assessing risks of material misstatement and designing further audit procedures;

(d) Any changes made to (a) – (c) as the audit progressed; and

(e) How the amounts in (a) – (d) were determined.

Mary D. Miller, FCAS, MAAA, Actuary Ohio Department of Insurance

"Materiality and the Actuary", Casualty Loss Reserve Seminar, September 2005

Materiality reviewed in relationship to financial values that are important to the intended audience, for example:

- Regulator: statutory surplus; risk based capital; loss, LAE and unearned premium reserves; IRIS tests
- Appraisal: net worth (GAAP); net income; earnings per share

Materiality considerations:

- Single vs. multi-line company
- Net retention
- Single company vs. member of a group
- Access to capital
- Management
- Prior loss reserve runoff
- Financial strength

"Materiality and ASOP No. 36: Considerations for the Practicing Actuary", CAS Committee on Valuation, Finance, and Investments

"No formula can be developed that will substitute for professional judgment by providing a materiality level for each situation."

Possible quantitative matters that the actuary could consider in the initial phase of determining whether a particular item is material:

- Absolute magnitude of item that represents a correction or a differing result if reviewing the work of others
- Absolute magnitude of item for which data are not available or are incomplete
- Ratio of item to reserves or statutory surplus
- Impact of item on IRIS ratios
- Impact of item on risk-based capital results
- Likelihood or size of potential variation of ultimate actual results from current expectations
- Ratio of item to net income or net worth
- Impact of item on earnings per share

NAIC Financial Examiners Handbook

Planning materiality: starting point is 1% to 5% of surplus.

NAIC Accounting Practices and Procedures Manual

The Codification defines a material omission or misstatement of an item in a statutory financial statement as having a magnitude such that it is probable that the judgment of a reasonable person relying upon the statutory financial statement would be changed or influenced by the inclusion or correction of the item.

- Some items are more important than others and require closer scrutiny. These include items which may put the insurer in danger of breach of covenant or regulatory requirement (such as an RBC trigger), turn a loss into a profit, reverse a downward earning trend, or represent an unusual event.
- The relative size of the judgment item is usually more important than the absolute size. An example for this is a reserve amount that would

significantly impact the earnings of a small company but barely impact the earnings of a large company.

- The amount of the deviation of an item that is considered immaterial may increase if the attainable degree of precision decreases.

SEC Staff Accounting Bulletin: No. 99 – Materiality

The relevant portions of this SEC bulletin may be summarized as follows:

- The common practice of using quantitative thresholds as rules of thumb for materiality has no basis in law or accounting literature. Exclusive reliance on certain quantitative benchmarks to assess materiality in preparing financial statements … is inappropriate; misstatements are not immaterial simply because they fall beneath a numerical threshold.
- The use of a percentage as a numerical threshold, such as 5%, may provide the basis for a preliminary assumption regarding materiality. There is no objection to a "rule of thumb" as an initial step in assessing materiality.
- Both quantitative and qualitative factors should be considered.
- Experienced human judgment is necessary and appropriate.
- An item that is small in absolute magnitude may be important if its inclusion or modification would change someone's conclusion about the basic financial condition of the company.
- Materiality should be considered both separately and in total. An example given considers materiality issues affecting revenues and expenses even though the difference in net income may net out to be small.

A matter is material if there is a substantial likelihood that a reasonable person would consider it important.

Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Report

Report of the CIA Task Force on the Appropriate Treatment of Reinsurance

Task Force on the Appropriate Treatment of Reinsurance

October 2007

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Seeing Beyond Risk Canadian Institute of Actuaries Institut canadien des actuaires Voir au-delà du risque

Memorandum

To: All Life and Property and Casualty Practitioners

From: Doug Tozer, Chairperson
Task Force on the Appropriate Treatment of Reinsurance

Jacques Tremblay, Chairperson
Practice Council

Date: October 3, 2007

Subject: **Report of the CIA Task Force on the Appropriate Treatment of Reinsurance**

Deadline for Comments: December 3, 2007

Over the last few years, securities and insurance regulators, rating agencies and media from around the world have been paying closer attention to reinsurance transactions. In particular, reinsurance transactions which tend to result in a reduced degree of risk transferred, sometimes referred to as Finite Reinsurance, have been under heavy scrutiny. In Canada, the Office of the Superintendent of Financial Institutions (OSFI) has become interested in the treatment of reinsurance, and has asked the Canadian Institute of Actuaries to look into this matter further.

The report that follows was prepared by the Task Force to provide guidance on reinsurance to the actuarial and insurance community in Canada. It provides a brief overview of reinsurance and risk transfer principles, paying attention to the emerging international consensus. It provides guidance on assessing risk transfer in a reinsurance contract for accounting and valuation purposes, and examines other related topics such as finite and financial reinsurance, side agreements, mirroring, bifurcation and reinsurance counterparty risk.

In accordance with the Institute's Policy on Due Process for Approval of Practice-Related Material other than Standards of Practice, this research paper has been unanimously approved by the Task Force on the Appropriate Treatment of Reinsurance and has received final approval for distribution by the Practice Council on May 16, 2007.

This report, including recommendations and opinions paper, is being circulated for comments. After the comment period, it will be issued as an educational note. Please contact Doug Tozer at DTozer@munichre.ca if you have any comments or questions.

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INTRODUCTION

The Practice Council (PC), the Committee on Life Insurance Financial Reporting (CLIFR) and the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) have reviewed the CIA Standards of Practice (SOP) addressing the topic of reinsurance. The focus of the review was on the adequacy of the SOP and the potential need for modifications, improvements or additional guidance. The PC, CLIFR and the PCFRC each concluded that the current SOP are adequate with respect to the treatment of reinsurance and that no immediate changes are necessary.

However, the PC, CLIFR and the PCFRC believe that more clarity and direction would be appropriate with respect to the definition of reinsurance and its eventual financial and capital treatment for an insurance entity. In this regard, in June of 2005, the PC issued a memorandum of guidance on the "Appropriate Treatment of Reinsurance". That memorandum summarized key principles and SOP pertaining to the appropriate treatment of reinsurance in actuarial work. It also announced the PC's intention to form a task force, including external stakeholders, to examine reinsurance-related topics in greater depth. The task force was mandated to develop additional recommended guidance and to consider the need for potential modifications to SOP.

Specifically, the task force's mandate is as follows:

> *The focus of the task force will be on finite reinsurance, the degree of risk transfer in reinsurance transactions, side agreements, stop loss arrangements and reinsurance counterparty risk. The task force will consist of Life and P&C actuaries from the Committee on Life Insurance Financial Reporting (CLIFR) and the Property and Casualty Insurance Financial Reporting Committee (PCFRC) and will invite participation from reinsurance practitioners, federal and provincial regulators, the Insurance Bureau of Canada (IBC), the Canadian Life and Health Insurance Association (CLHIA) and the Canadian Institute of Chartered Accountants (CICA). The task force will develop a research paper or an educational note on these matters. The task force will consider and suggest, if deemed necessary, potential modifications to the SOP.*

The report is intended to supplement the CIA SOP in an effort to achieve some consistency in how actuaries deal with reinsurance. Probably the most important area of supplement is in the concept of risk transfer as the CIA SOP are silent in this area.

DEFINITIONS

The task force has concluded that International Financial Reporting Standard 4 (IFRS 4) contains the most comprehensive definitions relating to insurance and reinsurance and the ones that are most consistent with current Canadian Generally Accepted Accounting Principles (GAAP). Therefore, in this report the following definitions, which are based on the IFRS 4 definitions, are applicable:

Insurance contract: A contract under which one party (the ***insurer***) accepts significant ***insurance risk*** from another party (the ***policyholder***) by agreeing to compensate the ***policyholder*** if a specified uncertain future event (the ***insured event***) adversely affects the ***policyholder***. Compensation is defined by the ***insurance contract*** terms.

Insurer: The party that has an obligation under an ***insurance contract*** to compensate a ***policyholder*** if an ***insured event*** occurs.

Policyholder:	A party that has a right to compensation under an ***insurance contract*** if an ***insured event*** occurs.
Insured event:	An uncertain future event that is covered by an ***insurance contract*** and creates ***insurance risk***.
Insurance risk:	Risk, other than ***financial risk***, transferred from a ***policyholder*** to an ***insurer***. A new risk created by an ***insurance contract*** is not an ***insurance risk***. In particular, lapse or persistency risk (i.e., the risk that the ***policyholder*** will cancel the contract earlier or later than the ***insurer*** had expected) is not an ***insurance risk*** because the payment to the ***policyholder*** is not contingent on an uncertain future event that adversely affects the ***policyholder***.
Financial risk:	The risk of a possible future change in one or more of a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract.
Reinsurance contract:	A contract under which one party (the ***reinsurer***) accepts significant ***reinsurance risk*** from another party (the ***cedant***) by agreeing to compensate the **cedant** if specified uncertain future event(s) (the ***reinsured events***) adversely affect the **cedant**. Compensation is defined by the **reinsurance contract** terms.
Reinsurer:	The party that has an obligation under a ***reinsurance contract*** to compensate a ***cedant*** if a ***reinsured event*** occurs.
Cedant:	A party that has a right to compensation under ***reinsurance contract*** if a ***reinsured event*** occurs.
Reinsured events:	Uncertain future events that are covered by a ***reinsurance contract*** and create ***reinsurance risk***.
Reinsurance risk:	Risk, other than ***financial risk***, transferred from a ***cedant*** to a ***reinsurer***. A new risk created by a ***reinsurance contract*** is not a ***reinsurance risk***. For Life Business, ***policyholder*** lapse or persistency risk (i.e., the risk that a ***policyholder*** will cancel the contract earlier or later than the ***insurer*** had expected) is a ***reinsurance risk*** because the payment to the ***cedant*** is contingent on uncertain future event(s) that adversely affect the ***cedant***.

BACKGROUND

Overview of Reinsurance Concepts and Terminology

In order for this report to focus on the key issues it has been written assuming that the reader has a basic understanding of reinsurance concepts and terminology. Readers who wish to enhance their basic reinsurance knowledge are encouraged to refer to other sources. Two good sources are; Life, Health & Annuity Reinsurance (2005) by John E. Tiller, FSA, Denise Fagerberg Tiller, FSA, MAAA and Reinsurance (1997) by Strain Publishing.

Finite Reinsurance

The terms "finite reinsurance" and "financial reinsurance" are widely used but are difficult to define precisely. Generally speaking, "finite reinsurance" contracts are associated with the P&C reinsurance industry and have the effect of limiting the reinsurer's downside loss, whereas "financial reinsurance" contracts are more common in the life reinsurance industry and they tend to be associated with signifying the motivational intention of the parties rather than limiting the reinsurer's downside loss.

In the International Association of Insurance Supervisors' (IAIS) Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance, "finite reinsurance" is stated to be "*a generic term used to describe an entire spectrum of reinsurance arrangements that transfer limited risk relative to aggregate premiums that could be charged under the contract.*" The guidance paper goes on further to say that "*…there is no accepted global definition of finite reinsurance…*" The American Academy of Actuaries Risk Transfer Practice Note contains a similar assessment of "finite reinsurance" as it says "*...there is no universally accepted definition of the term finite…*" In general, "finite reinsurance" is used to denote reinsurance where risk transfer is, in some way, limited. The IAIS Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance also contains additional definitions of "financial reinsurance" which indicate that this categorization of reinsurance contracts has financial and strategic motivations taking precedence over the insurance risk transfer motivation.

The task force concurs that the terms "finite reinsurance" and "financial reinsurance" are ambiguous terms and for that reason believes that classifying reinsurance contracts into "finite/financial" and "non-finite/traditional" is not useful and could possibly be misleading. Therefore, this report will not try to define "finite reinsurance" and "financial reinsurance" but rather it presents the various types of limitations that can exist in reinsurance contracts. Consequently, the remainder of this report does not use the terms "finite reinsurance" and "financial reinsurance." The task force believes, however, that this report provides guidance on all reinsurance contracts including those contracts that can be described as "finite/financial."

Reinsurance and the Actuary

CGAAP Valuation of Policy Liabilities

For both Life and P&C insurers, the valuation of policy liabilities is governed by the General SOP. Further guidance is provided in the practice-specific SOP including educational notes and other guidance.

Subsection 2130 of the SOP directs the actuary to establish liabilities that are consistent with the insurers accounting policy, and that consider the future net cash flow arising from in force policies at the balance sheet date. Paragraph 2130.05 specifies that the cash flows are net of reinsurance.

Consistency in the context of reinsurance treatment means that the actuary would ensure that the liabilities provide consistently for cash flows gross of reinsurance, and reinsurance cash flow. In valuing the features of a reinsurance contract, the assumptions used have to be consistent with the gross cash flows. For example, if the reinsurance contract specifies that a particular feature becomes triggered under a certain assumption, the actuary would reflect that feature consistent with the assumption made for the gross cash flow.

The actuary of the ceding company needs to consider the possibility that the reinsurer will exercise its options to its advantage (i.e., anti-select against the insurer), and vice-versa. This requires the actuary to test the various features of the reinsurance contract, assuming that each party exercises the option to their advantage. The final policy liability is generally the largest resulting liability. Although it is not directly stated, it is implied that in conducting these tests, the actuary would consider all cash flows arising from the reinsurance treaty.

Although not directly stated in the CIA SOP, the task force believes that it is strongly implied that:

a) the valuation considers all cash flows arising from the reinsurance contract;

b) all modifications and side agreements to the reinsurance contract are required to be considered; and

c) the credit rating of the reinsurer is to be taken into account.

Regulatory Capital Treatment of Reinsurance

Federally or provincially regulated Life and P&C insurers and reinsurers in Canada are required to determine their capital adequacy according to regulatory guidelines or regulations. The capital requirements are generally calculated using a factor-based approach, and as such, are not always well suited to recognizing the effects of reinsurance on the risk profile of the insurer. The factors are applied to exposure bases which are generally net of reinsurance but the treatment of reinsurance is a "black or white" decision (i.e., if a reinsurance contract is in place the ceding company receives 100% reinsurance credit).

CURRENT REINSURANCE ACCOUNTING PRACTICE

Reinsurance Accounting and Deposit Accounting

When a contract is accounted for as reinsurance, all premiums, allowances and expenses under the contract are included in revenues and expenses, and claims recoveries under the contract are estimated in the valuation of insurance policy liabilities and are also included in revenues and expenses. This is referred to as "reinsurance accounting", and when this is not appropriate under generally accepted accounting principles, "deposit accounting" must be applied to the contract instead.

Under "deposit accounting", the premium paid or received is initially recorded as an asset or liability (the "deposit"). For contracts that do not transfer significant underwriting risk, the present value of expected recoveries is also reflected in the carrying value of the deposit, and changes in estimates of the deposit are included in interest income or expense. For contracts that transfer underwriting risk but no significant timing risk, the deposit changes to reflect the unexpired portion of coverage inherent in the premiums, which is reflected in expense, and also to reflect the present value of cash flows from future loss recoveries, which is included in losses for the period. The primary reference for deposit accounting is American Institute of Certified Public Accountants Statement of position 98-7, "Deposit Accounting: Accounting for Insurance and Reinsurance Contracts that Do Not Transfer Insurance Risk."

Relevant Accounting Standards

In considering whether risk has been transferred under a reinsurance agreement, the actuary must be aware of the applicable accounting standards and related regulatory requirements that are applicable to the valuation of insurance policy liabilities.

There are currently three principal different sets of GAAP that may be relevant; Canadian GAAP, United States GAAP (US GAAP), and IFRS. In addition, Canadian regulatory requirements narrow the range of choices available within GAAP for P&C insurers. The rules applicable to reinsurance are summarized below.

Canadian GAAP

For P&C insurers, Accounting Guideline AcG-3 provides minimal guidance on reinsurance risk transfer, while for life insurers, CICA 4211 effectively embeds CIA standards and the Canadian Asset Liability Method (CALM) in Canadian GAAP. However, with the recent implementation of the Financial Instruments accounting rules of CICA 3855, a reinsurance contract that principally involves the transfer of financial risks is no longer exempt from the general accounting rules of CICA 4211 and CALM, and is required to be classified as a financial instrument. This will require life insurers to consider the classification of reinsurance arrangements that may transfer significant financial risks as well as insurance risks.

Both the non-life and life Canadian GAAP pronouncements make general statements that in order to account for a contract as reinsurance, the contract should transfer risk, and AcG-3 further states that the risk transferred should be insurance risk. Contracts that do not transfer insurance risk should follow deposit accounting. No quantitative tests or other detailed guidance are provided in authoritative Canadian GAAP literature.

As a result, life insurers have typically not applied any quantitative testing of risk transfer for reinsurance, and in the past, the commonly expressed view has been that this is not necessary since the classification of reinsurance does not affect the cash flows from reinsurance contracts one way or the other, when completing a CALM valuation.

In contrast, P&C insurers have been significantly affected by Canadian regulatory requirements, as described in the following section.

Canadian Regulatory Requirements

Canadian GAAP is required for financial reporting to Canadian regulators. However, regulators have the statutory right to specify the use of accounting rules that may not be in accordance with GAAP. To date, regulators have only acted to narrow the range of alternatives available under GAAP.

For P&C insurers, OSFI Guideline D-7 effectively imports US GAAP for assessing reinsurance risk transfer. This guideline incorporates language drawn from Statement of Financial Accounting Standards 113 (FAS 113), which is described in more detail below.

It should be noted that there is no OSFI requirement for life insurers similar to Guideline D-7, and so regulatory requirements for life insurers have not forced the use of US GAAP rules for reinsurance for life insurers.

United States GAAP

US GAAP pronouncements for reinsurance risk transfer are relatively complex and only a general conceptual summary is provided here. The principal source is FAS 113.

- FAS 113 makes a distinction between short-duration and long-duration insurance contracts, as follows.
- For ***short-duration insurance contracts***, two tests must be passed to determine that risk has been transferred:

  a) *"The reinsurer assumes significant insurance risk under the reinsured portions of the underlying contracts.*

  b) *It is reasonably possible that the reinsurer may realize a significant loss from the transaction.*

  A reinsurer shall not be considered to have assumed significant insurance risk under the reinsured contracts if the probability of a significant variation in either the amount or the timing of the payments by the reinsurer is remote."

  FAS 113 also provides that <u>both</u> the amount and timing of the reinsurer's payments should depend on and directly vary with the amount and timing of claims settled under the reinsured contracts. Contract provisions that would delay timely reimbursement of claims could also rule out the use of reinsurance accounting, as can other risk-limiting contract features that limit the amount of loss to the reinsurer.

- For ***long-duration insurance contracts*** (typically life and health contracts), as for short-duration contracts, there must be a reasonable possibility that the reinsurer may realize a significant loss from assuming insurance risk, and that risk must come from the mortality risk and/or morbidity risk in the underlying insurance contracts.
- "Significant loss" is considered to mean a net overall loss on the reinsurance contract (measured based on the present value of cash flows), not just a significant claim under the contract. It can be difficult to meet this test in reinsuring inherently profitable blocks of business, even if there are no "finite/financial reinsurance" aspects to the agreement. As a result, it is possible that a contract that transfers insurance risk could nevertheless not qualify for reinsurance accounting under US GAAP.
- "Paragraph 11" exemption – FAS113.11 provides that if the amount of risk transfer is judged to be insufficient, reinsurance accounting can still be applied if the reinsurer has "stepped into the shoes" of the ceding insurer, so that the reinsurer has taken on "substantially all" of the insurance risk that is present. However, "substantially all" is strictly interpreted to mean effectively 100%, so that it cannot be used if there has been any modification of the risk, retention or participation features by the ceding company. This provision is effectively the only basis under which US GAAP would allow reinsurance accounting for the reinsurance of inherently profitable insurance contracts.
- Quantitative testing – There is an expectation that quantitative testing of cash flows would be used to demonstrate that sufficient risk has been transferred. While not part of any authoritative guidance, "at least a 10% chance of at least a 10% loss" is a commonly expressed rule-of-thumb. It is also accepted that in some instances, such as earthquake catastrophe coverage, a lower percent chance of a relatively larger loss would be acceptable.

International Financial Reporting Standards

International Financial Reporting Standards (IFRS) have been adopted as GAAP in most of Europe and in many other jurisdictions outside of the United States. The Canadian Accounting Standards Board has announced that it is intended that Canadian GAAP will converge with IFRS over time.

To date, IFRS does not provide complete guidance on the accounting measurements for insurance contracts, but further standards are under development in this area. However, current IFRS standards do include robust definitions of insurance contracts and other provisions relevant to reinsurance.

IFRS Standard 4 *Insurance Contracts* ("IFRS 4") applies to all insurance contracts, including reinsurance contracts, and defines an insurance contract as:

> "A contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder." *(IFRS 4 Appendix A)*

and further defines insurance risk as:

> "Risk, other than financial risk, transferred from the holder of the contract to the issuer." *(IFRS 4 Appendix A)*

Also, IFRS 4 B23 states that:

> "Insurance risk is significant if, and only if, an insured event could cause an insurer to pay significant benefits in any scenario, excluding scenarios that lack commercial substance (i.e., have no discernible effect on the economics of the transaction). If significant additional benefits would be payable in scenarios that have commercial substance, the condition in the previous sentence may be met even if the insured event is extremely unlikely or even if the expected (i.e., probability-weighted) present value of contingent cash flows is a small proportion of the expected present value of all the remaining contractual cash flows."

Also, IFRS 4 B19 (b) gives examples of items that are not insurance contracts:

> "Contracts that have the legal form of insurance but pass all significant insurance risk back to the policyholder through non-cancellable and enforceable mechanisms that adjust future payments by the policyholder as a direct result of insured losses, for example, some financial reinsurance contracts or some group contracts."

IFRS 4 does not provide quantitative guidance in assessing significance, and it requires that "an insured event could cause an insurer to pay significant benefits in any scenario," rather than requiring that an overall loss on the reinsurance contract could plausibly arise as is the case under US Statement of Financial Accounting Standards 113. As a result, IFRS 4 appears to allow a wider range of reinsurance contracts to be given reinsurance accounting than would be the case under US GAAP. For example, it is clearer under IFRS 4 that catastrophe covers are expected to receive reinsurance accounting.

Normally, insurance and reinsurance contracts measured in accordance with Canadian actuarial practices will reflect all contractual rights or obligations, so that unbundling would be permitted but not required under IFRS. IFRS 4 provides that "unbundling" or "bifurcation" of a contract between insurance and deposit components is ***required*** if some contractual rights or obligations would not otherwise be recognized and measured in the balance sheet of the insurer, so long as the deposit component can be reliably measured. Unbundling is ***permitted*** but not required otherwise, and might be done if the preparer believes that this provides better disclosure**.**

THE CONCEPT OF RISK TRANSFER

Key Principles of Risk Transfer

Risk transfer can be a complicated subject to define and describe. Most insurance and reinsurance professionals believe they have an intuitive understanding of the concept of risk transfer from a high level but have probably not delved into the specifics. To set the stage for a deeper risk transfer understanding, the task force has identified the following four key principles that provide a framework for risk transfer and risk transfer assessment.

Risk Transfer Principle #1: *There are several approaches that can be used to assess the existence of risk transfer.*

There is no single test or rule that will be applicable in assessing the existence of risk transfer for each and every type of contract. In some contracts, it may be obvious that risk transfer exists even in the absence of any specific test.

Possible approaches to assessing risk transfer are discussed in detail throughout the remainder of this paper.

Risk Transfer Principle #2: *Professional judgment will be required when assessing the existence of risk transfer.*

Professional judgment will be either in the form of selecting appropriate historical data to study or in setting parameters for models that will be used to perform a quantitative test or in documenting qualitative assessments. For both Life and P&C reinsurance, actuaries and other relevant professionals will assess risk transfer.

SOP paragraph 2130.02 requires the actuary to "coordinate the valuation with the insurer's accounting policy…so that the policy liabilities...conform to the presentation of the income statement." This requirement means the Appointed Actuary must assess risk transfer for each reinsurance contract. If the Appointed Actuary does not reach a similar conclusion on risk transfer as is being presented in the financial statements then a qualified opinion must be considered.

Risk Transfer Principle #3: *The entire agreement consisting of the reinsurance contract and all written and verbal agreements and correspondence must be considered in assessing the existence of risk transfer.*

This principle is consistent with the valuation principle in the SOP. Risk transfer must be assessed based on all commitments the parties have made to each other regardless of whether those commitments are included as part of the reinsurance contract document. Reinsurance contracts are typically composed of a written contract and may contain one or more amendments that occur subsequent to the introduction of the reinsurance contract. Each of these needs to be

considered in assessing risk transfer regardless of whether they have been included in the reinsurance contract document or not.

A reinsurance contract could also be modified by verbal agreements or by other written documents that may not be obvious amendments. The actuary must make a reasonable effort to be informed of each and every commitment made by any authorized party. Further discussion on side agreement can be found later in this report.

Risk Transfer Principle #4: *The existence of risk transfer must be assessed at inception of the contract and every time a change to the contract that significantly alters the expected future cash flows of that contract is made.*

Risk transfer does not need to be continually assessed. Events that occur during the normal course of the contract do not trigger a need for a reassessment. An example of such a feature is the build up of a Claims Fluctuation Reserve. Another example is when the reinsurer earns significant profits over time such that if this level of profits had been included in the risk transfer assessment performed at issue then the risk transfer would be negated.

However, risk transfer may need to be reassessed any time a modification to the contract is made. Examples of changes requiring risk transfer reassessment are: a revision to the reinsurance premium rates, a revision to the coverage levels other than a linear increase or decrease in the quota share, the addition or deletion of a new insurance coverage, the addition or deletion of an option (e.g., recapture with or without penalty). Prior to reassessing risk transfer, the actuary would first review the previous assessment to determine if it is still applicable after the change.

Assessing the "Existence" of Risk Transfer

To begin the exercise of assessing the "existence" of risk transfer the actuary would ask the following question:

"Does the reinsurance contract protect the ceding company from negative financial impacts that result from one or more adverse events?"

If the answer is a clear "yes" then risk transfer exists and conversely if the answer is clearly "no" then risk transfer does not exist. There are, however, many situations where the answer to this question is not simple and the actuary must perform a risk transfer assessment in order to prove the existence of risk transfer.

Key principle #1 states, "*There are several approaches that can be used to assess the existence of risk transfer.* All approaches, however, fit into two broad categories that are generally recognized in developed global insurance markets when assessing risk transfer. These categories are a) Qualitative Assessment and b) Quantitative Testing.

The usual process would be for the actuary, or other relevant professional, to first, qualitatively assess if risk transfer is "reasonably self-evident". If the actuary does not conclude that risk transfer is "reasonably self-evident" then the actuary must either expand the qualitative assessment or perform a quantitative test.

The actuary would not conclude that quantitative testing is always better proof than qualitative assessment or vice versa. The type of approach used will depend on the risk being transferred and the nature of the contract. There are situations where quantitative testing might lead to the wrong conclusion (e.g., a pandemic cover with a very high attachment point). In addition, the

actuary may find that a combined approach works best. For example, a qualitative assessment may be done for the overall contract with a quantitative test performed on one particular contract feature. One approach is often sufficient to prove the existence of risk transfer and several approaches rarely, if ever, sufficiently enhance the proof to justify the extra work.

Further discussion on how the actuary actually performs these assessments follows.

Qualitative Assessment

a) "Reasonably Self-Evident" Risk Transfer exists when it is intuitively obvious that the contract protects the cedant from future events that could adversely affect the cedant's financial position. In assessing "reasonable self-evidence" the actuary would focus on answering the question "if the reinsured event happened is protection afforded" and not on how probable the event is or how much risk is transferred. Low frequency/high severity risks are commonly transferred in reinsurance contracts and comprise most of the "reasonably self-evident" class of contracts. Examples of these contracts are casualty excess of loss reinsurance where coverage is in excess of an attachment point and there is no cap on losses and specific event reinsurance such as natural catastrophe covers.

   A "reasonably self-evident" qualitative assessment would be restricted to contracts that a) are done on arms-length terms, and b) where there are no potentially limiting risk transfer contract features as defined later in this paper. Contracts that do not meet these requirements must be assessed using either an expanded qualitative assessment (i.e., a separate assessment of the restrictive feature) or a quantitative assessment.

   If the above conditions are met then the actuary can conclude that the reinsurance contract has "reasonably self-evident" risk transfer and minimal documentation is required.

   The actuary would also be aware that for many "reasonably self-evident" risk transfer contracts, sophisticated computer models with which to perform a quantitative test may either not be available or may lead to inconclusive results.

b) If the above conditions are not met, then the actuary would next consider whether expanding the qualitative assessment will lead to a conclusion that risk transfer exists. This is typically the next step where a quantitative test usually can not be done either because relevant historical data are not available or the risk does not lend itself to mathematical models. Examples where an expanded qualitative assessment may be appropriate are reinsurance contracts with occurrence limits or contracts that would fit the "reasonably self-evident" conditions except they contain one or more potentially limiting features or are related party transactions.

   In risk limiting feature situations, the actuary can typically qualitatively assess the restrictive feature by isolating the financial impact of the feature under one or more adverse scenarios. In situations where reliable historical data or computer models are not available to make this assessment, the actuary will need to develop other comparables. As well, for related party transactions, it is important to assess the market consistency of the reinsurance premium being charged in relation to the risk being transferred.

   Qualitative assessments that are not "reasonably self-evident" usually require substantially more documentation to prove risk transfer exists. The actuary would err on the side of too much documentation rather than not enough in these situations.

Quantitative Testing

Quantitative testing is typically used to assess the existence of risk transfer when the risk being transferred lends itself to mathematical analysis and relevant data are available. Mortality reinsurance with an experience refund feature, quota share reinsurance with a sliding scale allowance and stop loss contracts are examples where quantitative testing is typically performed.

Computer models that perform scenario testing can be built to perform the test. In many cases, these models are derived from the pricing, valuation or Dynamic Capital Adequacy Testing (DCAT) work performed. Relevant data are either based on historical results of the business in question or similar business. Scenario testing can either be deterministic or stochastic and income statement, Conditional Tail Expectation (CTE) or Tail Value at Risk (TVAR) measures are all acceptable measures.

Commonly, quantitative tests will demonstrate that the cedant is "significantly" protected from adverse financial effects due to "plausible" insurance outcomes. "Significantly" and "plausible" will be defined based on the contract's particular characteristics. "Significantly" is relative to the financial outcome of an adverse scenario while "plausible" is defined in the DCAT Educational Note.

In addition to compiling results of a quantitative test the actuary would document how the testing supports the risk transfer conclusion.

Assessing the "Extent" of Risk Transfer

Once it has been proven that a risk transfer exists, then the actuary needs to have a clear view on the extent of the risk transfer for liability determination and financial statement presentation.

For P&C business, traditionally frequency and severity of loss (and hence the presence of risk transfer) have been assessed separately. However, current thinking (e.g., US GAAP and OSFI Guideline D-7) is that frequency and severity would be combined when assessing risk transfer. The uncertainty in both timing and amount risk would be present for the contract to be treated as reinsurance. Timing risk can generally be determined by looking at the contract features.

For Life business, it is not necessary to assess the effects of the transfer of timing risk and amount risk separately nor is it necessary to separately assess frequency and severity since the CALM method will accurately reflect the combination of these. The challenge is to appropriately define future cash flows, which may be scenario dependent, particularly when the reinsurance contract contains potential risk limiting features.

For both Life and P&C business, consideration of the extent of the risk transfer is as important for regulatory capital calculations as it is for liability determination and financial statement presentation. Current regulatory capital requirements (i.e., Minimum Continuing Capital and Surplus Requirement (MCCSR) for Life insurers and Minimum Capital Test for P&C insurers) assume that risk transfer in a reinsurance contract is absolute (i.e., the reinsurance risk is completely and permanently transferred to the reinsurer). This assumption is usually appropriate when reinsurance contracts are written at market terms which are the vast majority of reinsurance contracts currently in the Canadian marketplace. However, regulatory capital formulas do not reflect the wide array of possible limitations on risk transfer that can exist in reinsurance contracts. One example of where regulatory capital formulas break down in this regard is where the reinsurer contains an option that allows it to unilaterally alter the terms of the reinsurance (e.g., the reinsurer can force early recapture or commutation of claims).

Limitations of Risk Transfer

There is a wide variety of reinsurance contracts currently used in the Canadian marketplace. Many of these contain features that have the potential of limiting the risk transfer from the cedant to the reinsurer. Generally, these features are integral parts of the reinsurance contract and without them the reinsurer may not be willing to accept the risk or the price would be prohibitively high to the ceding company. It is important to note, however, that the mere presence of any of these features in a reinsurance contract does not mean that risk has not been transferred. Rather, their presence is an indication that additional work needs to be performed by the actuary to assess the "existence" and "extent" of the risk transfer. Some of these limitations are obvious (e.g., a corridor in a stop loss contract) while others need further study (e.g., a contractual recapture at the option of either party under pre-set conditions). Following is a list of potential risk limiting features of reinsurance contracts that is intended to give the actuary an indication of the types of features that require specific analysis in order to determine both the existence and extent of risk transfer. This list is not meant to be exhaustive but rather it is illustrative.

The list is organized into two broad categories: a) Terms Set in Advance and b) Experience Based Renewals.

a) Terms Set in Advance

i) Profit sharing

"Profit sharing" provisions are interchangeably referred to as profit sharing, profit commissions, experience rating provisions or experience refund provisions. Typically, the assuming company is willing to offer profit sharing to the ceding company due to the asymmetry of the spectrum of possible results where in the absence of such a feature, the probability and/or magnitude of favourable scenarios far exceeds the probability and/or magnitude of unfavourable scenarios.

For Life reinsurance, profit sharing arrangements are prevalent in the reinsurance of Group Life and A&S business and to a much lesser extent in Individual Life reinsurance contracts. Profit sharing amounts are determined by a pre-agreed formula, and take into account premiums, claims, and expenses. Percentages of profit sharing vary, and are often related to the size of the reinsured block of business and/or the amount of profit that emerges from the calculation.

For P&C reinsurance, profit sharing in reinsurance contracts is most often encountered on proportional contracts. Profit commission will return a pre-agreed percentage of any profits to the ceding company. Profits will be determined according to a pre-defined formula that takes into account premiums, claims and expenses. Other forms of profit sharing, such as experience rating refunds and no-claims rebates, may also be encountered, but are not common in the Canadian marketplace.

When assessing risk transfer, the actuary would be careful when there is a pre-determined expectation of large profit sharing. Such an expectation might be indicative of insufficient risk transfer. Also, absence of a loss carry-forward provision (used in the determination of the refund amounts) might reflect an expectation of the reinsurer that the possibility of loss in any one accounting period is remote. And finally, negative

experience refunds (i.e., the ceding company makes the assuming company whole for its losses) can negate risk transfer to the assuming company.

ii) Adjustability of reinsurance premiums and/or commissions

In these situations the reinsurance contract will either limit or adjust the amounts payable by/to the reinsurer under the contract. A typical example would be an adjustable commission on a proportional contract (with or without debit/credit carry forward provision), where the final commission payable to the ceding company will be based on the experience of the contract, within a pre-established range. A swing rate on a non-proportional contract will work similarly to the adjustable commission, except that the "adjusted" reinsurance premium rate to be applied to the contract will be based on the loss experience, within a pre-agreed range. Other examples include limits or caps on loss ratios, and loss corridor provisions on proportional contracts, which work similarly to a sliding scale commissions.

iii) Pre-set limits to timing of payments

Some contract features which restrict the timing of payments may indicate an intention to limit risk transfer. For example, some contracts may contain payment schedules or funds withheld provisions which may indicate such an intention. These and other contract features, however, may exist to facilitate the administration of the treaty, and do not necessarily indicate an intention to limit risk transfer. A clause that requires cash settlement on a quarterly basis for example, does not necessarily imply that risk transfer is not present, as long as the quarterly settlement has no restrictions and reflects the entire amount due according to the reinsurance contract. Professional judgment will be required to determine if any contract features that influence the timing of payments actually limit risk transfer.

iv) Expected duration of contract

For Life reinsurance, the presence of early recapture options might indicate that reinsurance is not intended for a long period of time. Recapture charges are typically assessed if the cedant exercises their recapture option. These charges usually take one of two forms: charges that are independent of past profitability of the reinsurance contract (e.g., a fixed per thousand of in force recaptured) or dependent on past profitability of the reinsurance contract. When the charges are independent of past profitability, risk transfer is not likely limited as long as the factors are reasonable. A cedant's motivation for this type of arrangement is typically a temporary need for capital, uncertainty regarding capital, or uncertainty with respect to a new product or product line. The cedant may be highly motivated to recapture business once their comfort level with the business increases. If the amount of the charges depends on past profitability, then this may be an indication that there has been limited intention to transfer risk on a permanent basis and further investigation is almost always necessary. For example, there is insufficient risk transfer if the assuming company can force recapture and is made whole for prior losses such as a deficit repayable on termination.

In P&C reinsurance, early recapture can be done through a commutation clause. Commutation clauses exist in most Ontario automobile excess of loss contracts, stating that accident benefit claims will be commuted back after a certain number of years, often

5 to 10 years. Other contracts allow commutation of claims or funds withheld after one or two years, sometimes in cases where no claims have been incurred. The funds withheld consist of a portion of the reinsurance premium that was paid into the fund and from which claims payments are made. This fund will be commuted back to the cedant when there are no claims. Generally, these clauses do not limit risk transfer but nevertheless the actuary would review these clauses when assessing risk transfer.

v) High front-end reinsurance commissions

For Life reinsurance, it is not uncommon to have reinsurance contracts that have payment schedules with high front-end allowances and accounts to which certain payments are applied. Such contracts may contain specific payment schedules, and therefore can be considered to have some element of financing. The presence of these provisions does not necessarily mean that risk transfer has been limited. High front-end allowances are often requested by cedants in order to offset their acquisition costs, especially when significant amounts of risk are reinsured. The cedant retains very little risk, and consequently may request significant up-front assistance in offsetting some of the cash costs associated with issuing a policy. Reinsurers are willing to support requests for high initial allowances, but are also keen to limit their lapse risk, which can create significant losses if early lapses are higher than expected. In these cases, the actuary should review the up-front reinsurance commissions to ensure they are reasonable.

vi) Counterparties

Contracts between companies that cede business back to the original cedant or an affiliate of the original cedant would be closely analyzed to ensure reserves and required capital is not being inappropriately arbitraged away.

vii) Other specific examples that the actuary should take care in assessing risk transfer are:

- coinsurance premiums that significantly exceed the premiums collected by the ceding company from its policyholders;
- Yearly Renewable Term (YRT) premiums that significantly exceed the ceding company's valuation mortality assumption;
- reinsurance allowances significantly lower than the ceding company's allocable direct expenses net of the reinsurer's own expenses (if coinsurance premiums are on original terms);
- limits on proportional contracts, especially absolute dollar, on aggregate claims reimbursement (e.g., a cap on a single catastrophic event);
- stop loss contract whereby the attachment point is above the ceding company's valuation assumption or there is a short termination notice (i.e., if experience is approaching the trigger, then the contract is cancelled and the trigger is reset at a higher level just to get capital relief);
- claims fluctuation reserves funded upfront where an extra premium is not justified;
- reinsurance between affiliated companies; and
- reinsurance transacted at non-market terms.

b) Experience Based Renewals

i) Future terms based on past experience

Reinsurance premium rates that are dependent on past experience are common. Where contracts are annually renewable, this does not limit the extent of the risk transfer. However, if reinsurance premium rates are guaranteed to recover any portion of prior year losses, then risk transfer is limited unless the ceding company has the ability to retain the business or place the reinsurance elsewhere.

Multi-year contracts where renewal is not at the cedant's option would also be closely reviewed by the actuary. Although a multi-year contract does not restrict risk transfer by itself, this type of contract often includes other features that would limit risk transfer. For example, an excess contract may call for a significant increase in premium should there be a loss in a prior year, thereby virtually guaranteeing payback. Another example would be a proportional contract with a commission debit/credit carry forward provision.

ii) Forced renewals

These provisions require that if a contract is in deficit, that the cedant is obligated to cede future business to the reinsurer until at least the losses are eliminated. The purpose of these provisions is to prevent a cedant from moving the business before the reinsurer can recover the deficit. If the future business ceded is at market terms then it is possible that risk transfer is not limited but the actuary needs to assess each case individually.

OTHER ISSUES

Side Agreements

Reinsurance contracts may be modified or amended by other agreements, sometimes subsequent to the effective date of the original contract. These modification agreements, generally referred to as "amendments", are clearly documented, sometimes in the form of a letter, and are usually included with or attached to the original reinsurance contract papers. In this report, amendments are considered part of the reinsurance contract.

For the purpose of this section, side agreements are agreements made between a cedant and a reinsurer that are not directly incorporated into the reinsurance contract. Side agreements can be either written or verbal. Side agreements can obscure or misrepresent the nature or intent of a reinsurance contract. In extreme situations, side agreements may even negate any true transfer of risk. As well, they can cause confusion and ambiguity in administration and at time of claim settlement

.In order to comply with the SOP, the actuary would pay special attention to all side agreements, particularly analyzing their intent, and be suspicious when there is an apparent lack of disclosure as it may indicate appropriate accounting treatment may not be followed. To reiterate a statement made under Key Principle # 3 – "The actuary must make a reasonable effort to be informed of each and every commitment made by any authorized party."

A special case of a side agreement is one which places a requirement on the ceding company to enter into future reinsurance contracts with the reinsurer. Side agreements of this type could be an indicator that risk transfer on an existing contract is limited, possibly even non-existent, particularly if the requirement depends on the historical profitability of an existing reinsurance

contract. The task force feels that risk transfer is not impaired due to the existence of such a requirement provided the future reinsurance be transacted on market terms at that time. However, if the side agreement requires the future reinsurance agreement to be on non-market terms, then this likely leads to limited risk transfer under the current reinsurance agreement and the actuary would assess both the existence and extent of risk transfer as impacted by this option.

Both the Office of Superintendent of the Financial Institutions (OSFI) and the Autorité des Marchés Financiers (AMF) strongly discourage the use of side agreement used in conjunction with reinsurance contracts.

Mirroring and Communication

Conceptually speaking, ceded reinsurance liabilities determined by the cedant would be substantially similar to assumed reinsurance liabilities determined by the reinsurer for the same contract. If these liability amounts are exactly equal, it is often referred to as mirror reserving, or mirroring. The mirroring concept is based on the premise that both the cedant and the reinsurer would have exactly the same view of both the risk(s) being transferred and the value of those risk(s). In a rules-based accounting and valuation environment, where the method and assumptions used in liability determination are prescribed, this concept has considerable merit. For Life reinsurance, this is especially true in situations where the reinsurer has limited access to policy data. In such instances, the best source of liability calculations is, in fact, the ceding company. For P&C reinsurance, the reinsurer receives the case reserves from the ceding company, and could also rely on the ceded Incurred But Not Reported (IBNR) calculation from the cedant.

In the US, a few states require mirror reserving for statutory reserves. However, the prevailing opinion in the international actuarial community is that mirror reserving should not be required.

For Life reinsurance in Canada, in particular individual business, mirroring is likely to be inappropriate. First, each actuary is responsible for setting assumptions for all contingencies and for all cash flow payments based on his or her own best estimate assumptions. These best estimate assumptions are based at least, in some part, on each company's experience and the actuary's view of future experience. Differences can, and would, certainly occur for mortality, morbidity, lapse, expense and investment income assumptions. Expenses incurred and investment income earned by the cedant and the reinsurer will be different resulting in different valuation assumptions being used by each actuary. What may not be obvious is why there are differences in mortality, morbidity and lapse assumptions. In the cedant's case, experience is based on its own observed mortality, morbidity and lapses, each of which is influenced by its underwriters, sales force, and product characteristics. The reinsurer's experience, however, will be based on the concept of pooling of risks across companies, and the pooled experience that contributes to the assumptions of the reinsurer can, and likely will, be different from that of the cedant. As a result, legitimate differences do occur between the ceded and assumed reserves due strictly to assumption differences. Even if by coincidence the best estimate assumptions and margins for adverse deviations are similar enough that the initial ceded and assumed liabilities are close enough where it is perceived that mirroring is occurring, differences can, and likely will, emerge over time as assumptions or margins are revised to reflect the most recent experience.

For P&C reinsurance, although the reinsurer could easily rely on the cedant's IBNR estimate for proportional business, each actuary may have his or her own view of the expected development

of the particular treaty. The reinsurer's assumption will also be based on an aggregation of treaties, which will not necessarily develop similarly to the sum of the individual treaties. For non-proportional reinsurance, reliance on the ceding company's estimate is further complicated by the layering since a reinsurer may not be participating on all layers, or may have a different share of each layer. A cedant's IBNR estimate will also be based on a small amount of excess information such that the data set is too small to be credible, whereas the reinsurer will combine all treaties to produce more credible sets of data. This will usually result in a different set of assumptions.

Without a mirroring requirement and in the absence of communication between the actuaries, it is possible that the cedant and reinsurer actuaries have quite different views on the risk that is being transferred. This can result in material differences between the ceded liabilities determined by the cedant actuary and the assumed liabilities determined by reinsurer actuary. This may or may not be appropriate. A mirroring environment does not prevent these differences but it has the advantage of highlighting these differences quickly, as there is a process on at least an annual basis where there is a comparison of the reserves.

The task force's view is that a principles-based environment does not have a "natural" safeguard that ensures the cedant and reinsurer actuaries have a similar view of the risk being transferred. There are, however, processes that can be put in place that mitigate or eliminate this concern. The most fundamental safeguard is one of data integrity. For Life reinsurance, a validation process that can and would be performed by the administration area involves a reconciliation at a high level of policy counts, reinsurance amounts at risk, and in-force premiums by, say treaty, will confirm at a minimum the inventory. This reconciliation in theory would reflect only timing differences, as most reinsurance in Canada is transacted electronically. Nonetheless, it does serve as a useful check.

For P&C reinsurance, it is often appropriate for cedant and reinsurer actuaries to confer on unusually large individual losses or recent catastrophic events in order to ensure that appropriate and sufficient provisions for losses are recognized. Often reinsurers do not have the same level of data as the cedants, as they are one step further removed from the client. Consequently reinsurers place considerable reliance on the cedant for access to this information.

For reinsurance that is transacted on a coinsurance or proportional basis, the contingencies generally mirror those of the ceding company. Again, it is important to identify the terms of coverage.

A second important safeguard is communication between the cedant and reinsurer actuaries. This is most important for reinsurance contracts that are customized to the cedant's risk profile such that they are not necessarily straightforward. Such cases have the greatest opportunity for differences in interpretation. Mitigation techniques can involve communication between administration and pricing staff at both companies, but could also involve communication between the Appointed Actuaries of both the cedant and the reinsurer. It is the responsibility of the actuaries at both the cedant and reinsurer to ensure there is a common understanding of the risks being reinsured, and that the interpretation of those risks is consistent. Each would be familiar with the contracts, and it would be appropriate that, for any new arrangements that are outside what would be considered standard reinsurance arrangements, the actuaries of both companies concur on the risks transferred. For material or unusual reinsurance arrangements it is best practice for the actuaries of the cedant and the reinsurer to discuss the risk transfer aspects

of the reinsurance contract at inception of the contract and any time afterwards where a material change has occurred to the contract.

Bifurcation

There has been considerable discussion recently in some jurisdictions over the bifurcation of contracts. Bifurcation involves separating contracts into their basic constituents, including identification of those portions that are insurance versus those that are not. One purpose of this is to identify those portions of contracts that might not have risk transfer elements. Those aspects of the contracts then would be considered non-risk-transfer, and might be subject to deposit accounting. This might negate some reserve or capital credits taken by the ceding companies.

In reality, reinsurance contracts are not intended to be bifurcated. They are only valid contracts in their entirety. Individual components would not necessarily be intended to be issued on their own. They are only intended to be available as part of an entire package.

Suppose Company A ceded business to Reinsurer B on a coinsurance basis. Suppose also that Company A received an upfront commission of 150% of the first year commission. In order for Reinsurer B to achieve its profit targets, it needs to charge a higher premium from Company A in the renewal years. Bifurcation, in an extreme sense, might suggest that each risk would be unbundled. In this instance, the recovery of the upfront commission would be unbundled from the pure insurance risk. It would then be required to be treated as a loan, and non-insurance accounting would prevail.

This example illustrates the potential impact of contract bifurcation. A reinsurer would never only offer a loan. An upfront commission or allowance is only obtainable by the ceding company if there is an accompanying risk contract. The upfront commission is the result of the ceding company wishing to defray some of its own upfront cash strain. One can also view this as the reinsurer in a coinsurance situation taking some share of the upfront underwriting costs, sales costs, and agent commissions that are incurred by the ceding company.

Reinsurance Counterparty Risk

While reinsurance reduces both earnings volatility and probability of ruin, it exposes the cedant to credit risk either because the reinsurer will be unable to pay claims or because the amount reimbursed will differ from that which the cedant has expected to collect.

The SOP require the actuary to consider all cash flows, including reinsurance cash flows, when setting reserves. Paragraph 2130.05 states:

> *The comprised cash flow should include the effect of:*
>
> *retrospective premium, commission, and similar adjustments,*
>
> *experience rating refunds,*
>
> *reinsurance ceded,*
>
> *subrogation and salvage*
>
> *the exercise of policyholder options, and*
>
> *the deemed termination at the end of the term of its liabilities of each policy then in force.*

The SOP further require the actuary to consider the financial condition of its reinsurers. Paragraph 2130.16 states:

> As respects consistency, the actuary would, for example, ensure that the policy liabilities
>
> > provide for any risk of asset depreciation (C-1 risk) and of interest rate change (C-3 risk) for any deposit liabilities which the actuary did not value and which are separately reported without such provision, and
> >
> > provide consistently for cash flow gross of reinsurance and reinsurance cash flow, except that reinsurance cash flow would also take account of the financial condition of the reinsurer.

Paragraph 2130.30 amplifies this:

> The recovery on account of reinsurance ceded would take account of the financial condition of the reinsurer.

For P&C insurance, SOP Section 2200 provides specific direction on the valuation of policy liabilities. This section re-emphasizes that policy liabilities reflect reinsurance, but a specific margin for adverse deviations is required to be placed on the amount of reinsurance ceded. Paragraph 2250.05 specifies that margins for adverse deviations are required for recovery from reinsurance ceded, and 2250.08 and 2250.10 specify that the margin be determined as a percentage (0-15%) of the best estimate ceded claim and premium liabilities. The degree of margin depends on the actuary's assessment of the uncertainty of recovery (e.g., as evidenced by the history of disputes with a reinsurer). This would also take into account the credit worthiness of the reinsurer's.

For Life insurers, there is no further guidance related to reinsurance provided in section 2300.

The risk that future reinsurance receivables (or ceded unpaid claims) are not recoverable is to be provided within the policy liabilities. The intent of the SOP is that the policy liabilities include a provision for future reinsurer default, similar to any other default provision. Similar considerations apply when taking credit for future receivables from policyholders (including reinsurers) arising from deficit recoveries, experience rating, etc. (paragraph 2130.25).

This task force believes that in normal circumstances, any credit provision be represented as a margin against best estimate assumptions. In the event that likelihood is high that a future reinsurance receivable will not be realized in its entirety, it is the joint responsibility of the actuary and the accountant to ensure that such individual situations are reflected appropriately in the balance sheet.

When estimating if a credit provision is necessary, and the amount of such a provision, the actuary would consider the following factors:

- The rating from rating agencies such as Standard & Poor's or A.M. Best;
- Any history of dispute on claims;
- Whether the reinsurer or book of business is in runoff;
- The expertise of the reinsurer;
- The diversification of the reinsurer;
- The quality of the reinsurer's retrocession; and

- The MCCSR/TAAM ratio for a life reinsurer, or the MCT/BAAT ratio for a P&C reinsurer.

The above situation would be contrasted to the situation where the insurer has paid a claim and is awaiting money from the reinsurer (current reinsurance receivable). In such an instance, if a claim is in dispute, or the collection is outstanding for a certain number of months, accounting rules would dictate setting up a reserve for bad debt. Although the advice of the actuary may be sought for establishing this reserve, the bad debt account would not be part of the actuary's estimate of policy liabilities.

Concentration risk is not intended to be the same as counterparty credit risk. Concentration risk is the risk of excess exposure to a single counterparty, and needs to be considered and addressed by the company's risk management policies. Good risk management practice would include the monitoring of counterparty exposure, procedures for the approval of additional counterparties, and ongoing monitoring of counterparties either for credit or for impacts due to large-loss events.

APPENDIX

Date	Author	Document title
No date	Moore, Drab, Christie, Shah	IAS Applied to Property and Casualty Insurance - Overview of Reserving Issues
No date	AICPA	Evaluating Risk Transfer in Reinsurance of Short-Duration Contracts
Mar 5, 2004	ACLI, NAMIC, PCIAA, RAA	Response to AICPA Paper
Mar 29, 2004	Myles J. Tilley, CPA	Property and Casualty Reinsurance Accounting Guidance: A Historical Perspective
May 18, 2004	AAA	Response to the AICPA Paper
Dec 7, 2004	NAMIC, RAA	Accounting and Disclosure for Property and Casualty Reinsurance Contracts
May 25, 2005	AAA	Proposed Survey on Risk Transfer for Finite Reinsurance Products
June 3, 2005	Culp & Heaton	The Uses and Abuses of Finite Risk Reinsurance
June 13, 2005	AAA	Request for Suggestions on Risk Transfer Analysis
Aug 1, 2005	AAA	Risk Transfer in P&C Reinsurance: Report to the Casualty Actuarial Task Force of the NAIC
Sept 1, 2005	Eastwood & Clyne	Magazine Article: The Problem with Financial Reinsurance
Oct. 31, 2005	AAA	Reinsurance Reserve Credit
Nov. 2, 2005	LePan	Letter to Senate Banking, Trade and Commerce Committee on Finite Reinsurance
Nov. 1, 2005	AAA	Reinsurance Attestation Supplement 20-1: Risk Transfer Testing Practice Note
Nov. 1, 2005	Tillinghast Towers Perrin	Update: New NAIC Reporting Requirements for Risk Transfer
Nov 30, 2005	IAA	Practice Guideline: Accounting for Reinsurance Contracts under IFRS
Jan. 1, 2006	Group of Thirty	Executive Summary: Reinsurance and International Financial Markets
May 26, 2006	FASB	Bifurcation of Insurance and Reinsurance Contracts for Financial Reporting
July 23, 2006	IAIS	Guidance Paper on Risk Transfer, Disclosure and Analysis of Finite Reinsurance (Draft)

RECOMMENDATIONS AND OPINIONS OF THE CIA TASK FORCE ON THE APPROPRIATE TREATMENT OF REINSURANCE

CIA Standards of Practice (SOP)

The task force believes that the current SOP, when properly applied, are adequate with respect to reinsurance. However, in an effort to provide further clarity and guidance with respect to reinsurance, the task force recommends that they be augmented in two ways:

- Consider adding a section to the SOP that explicitly states that when determining policy liabilities, the actuary must consider the entire policy contract along with any other contracts attached to, or subsequent to the contract, including reinsurance contracts and side agreements. While the task force members believe this is already implied by the SOP, we believe a direct statement addressing this "head on" adds further clarity.
- Consider eliminating differences between the Life and the P&C sections of the SOP, particularly with respect to the level of margins necessary to provide for reinsurance counterparty risk. For P&C insurance, a specific margin range is noted in subsection 2250 whereas the Life insurance sections are silent on this topic.

Principle versus a Rules-Based Approach

The task force members strongly believe that it is not advisable to espouse a rules-based approach in assessing the existence of risk transfer. A rules-based approach is not consistent with current Canadian and international accounting rules, and a rules-based approach cannot be comprehensive enough to capture all situations. In the case of potential risk limiting features, it would be impossible to anticipate the labelling, use, circumstances and effect of every risk limiting feature and as a result a rules-based approach would tempt practitioners to "manage to the test." Rather, the task force members believe that maintaining the current principles-based framework for making professional judgement is the prudent approach.

Regulatory Capital Formulae

The task force members believe that as long as portions of regulatory capital formulae remain factor-based then they may not recognize the fact that risk transferred in a reinsurance contract is not always completely and permanently transferred. Moreover, the task force members believe that the assessment of complete and permanent risk transfer should be left to the judgement of the Appointed Actuary when making regulatory capital calculations. External Audit, External Actuarial Review and, for Life business, the MCCSR Report that is required beginning at 2006 year-end provide sufficient controls that reasonable judgement is being applied.

Mirroring of Liability Amounts

The task force members strongly believe that mirroring of liability amounts (sometimes referred to as "reserve mirroring") by the cedant and the reinsurer is <u>not</u> appropriate for accounting purposes. Reserve mirroring is inconsistent with Canadian GAAP and IFRS principles and, in

the task force's view, will in many cases lead to inappropriate liabilities for the reinsurer (assuming the reinsurer must mirror the amounts calculated by the cedant).

Bifurcation of Reinsurance Contracts

The task force members strongly believe that requiring bifurcation of reinsurance contracts into insurance and financial components is not appropriate for accounting purposes. Bifurcation is not required under Canadian GAAP and IFRS principles and the complexity, impracticality and cost of broad application of the bifurcation of reinsurance contracts in financial reporting is likely to greatly exceed any benefit derived from increased transparency.

Canadian Institute of Actuaries
Institut canadien des actuaires

Second Revision of Educational Note

Dynamic Capital Adequacy Testing

Committee on Risk Management and Capital Requirements

November 2017

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

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MEMORANDUM

To: All members in the Life and Property and Casualty Practice Areas

From: Faisal Siddiqi, Chair
Practice Council

Marco Fillion, Chair
Committee on Risk Management and Capital Requirements

Date: November 24, 2017

Subject: **Second Revision of Educational Note—Dynamic Capital Adequacy Testing**

The Canadian Institute of Actuaries published its last revised educational note on Dynamic Capital Adequacy Testing (DCAT) in November 2013. The purpose of this update is primarily to ensure consistency with revisions to the Standard of Practice – Insurance, section 2500 –Dynamic Capital Adequacy Testing, and reflect any updates needed due to the Office of the Superintendent of Financial Institutions (OSFI)/Autorité des marchés financiers (AMF) guidelines on capital requirements, effective January 1, 2018: Life Insurance Capital Adequacy Test (LICAT) and Capital Adequacy Requirements for Life and Health Insurance (CARLI).

This educational note has been prepared by the Committee on Risk Management and Capital Requirements in accordance with the Institute's Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents, and received final approval for distribution from the Practice Council on October 24, 2017.

As outlined in subsection 1220 of the Standards of Practice, "The actuary should be familiar with relevant Educational Notes and other designated educational material." That subsection further explains that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

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1. Introduction

The primary purpose of this document is to provide guidance and support to actuaries of life and property and casualty (P&C) insurers in performing Dynamic Capital Adequacy Testing (DCAT) analyses in accordance with the Standards of Practice – Insurance, section 2500, Dynamic Capital Adequacy Testing. It replaces the November 2013 revised educational note on Dynamic Capital Adequacy Testing.

According to subsection 2520 of the Standards of Practice:

.01 The appointed actuary should make an investigation at least once during each financial year of the insurer's recent and current financial position and financial condition, as revealed by dynamic capital adequacy testing for selected scenarios.

.02 The appointed actuary should make a report of each investigation in writing to the insurer's board of directors (or to their audit committee if they so delegate) or its chief agent for Canada. The report should identify possible actions for dealing with any threats to satisfactory financial condition that the investigation reveals.

.03 The appointed actuary should ensure that the investigation is current. The investigation should take into consideration recent events and recent financial operating results of the insurer. [Effective April 15, 2017]

.04 The timing and frequency of the appointed actuary's investigations would be sufficient to support timely corrective actions by management and the board of directors or chief agent for Canada.

DCAT is one of a number of stress-testing processes that would fit within the insurer's overall risk management process. Stress testing includes scenario testing and sensitivity testing (refer to the glossary in Office of the Superintendent of Financial Institutions (OSFI) Guideline E-18 – Stress Testing, or to l'Autorité des marchés financiers (AMF) Stress Testing Guideline, for definitions). Stress testing has the following goals:

1. Risk identification and control—stress testing may be included in an institution's risk management activities at various levels; for example, ranging from risk mitigation policies at a detailed or portfolio level to adjusting the institution's business strategy. In particular, it would be used to address institution-wide risks, and consider the concentrations and interactions between risks in stress environments that might otherwise be overlooked.
2. Providing a complementary risk perspective to other risk management tools—stress tests would complement risk quantification methodologies that are based on complex, quantitative models using historical data and estimated statistical relationships. In particular, stress-testing outcomes for a particular portfolio can provide insights about the validity of statistical models at high confidence intervals; for example, those used to determine value at risk (VaR).

   As stress testing allows for the simulation of shocks that have not previously occurred, it would be used to assess models' robustness to possible changes in the economic and financial environment. Stress tests can help to detect vulnerabilities such as unidentified

risk concentrations or potential interactions between types of risk that could threaten the viability of the institution, but may be concealed when relying purely on statistical risk management tools based on historical data.

Stress testing can also be used to assess the impacts of customer behaviour arising from options embedded in certain products—particularly where the behaviour in extreme events is not well understood.

3. Supporting capital management—stress testing would form an integral part of institutions' internal capital management where rigorous, forward-looking stress testing can identify severe events, including a series of compounding events, or changes in market conditions that could adversely impact the financial health of the institution.
4. Improving liquidity management—stress testing would be a central tool in identifying, measuring, and controlling funding liquidity risks, in particular for assessing the institution's liquidity profile and the adequacy of liquidity buffers in case of both institution-specific and market-wide stress events.

The DCAT process allows the Appointed Actuary to inform the insurer's management about the implications that the business plan has on capital and to provide guidance on the significant risks to which the insurer will be exposed. The DCAT process would be viewed as an integral part of the insurer's risk management process, not merely as a compliance exercise. The DCAT report would be a result of a regular stress-testing framework.

As such, insurers can use the DCAT to help set internal target capital ratios (as per the OSFI's Guideline A-4, Regulatory Capital and Internal Capital Targets, or as part of the AMF's Guideline on Capital Adequacy Requirements). In turn, internal target capital ratios developed in accordance with these guidelines would also be considered when preparing the DCAT report.

It is essential that the board of directors and senior management are involved in the determination of the stress scenarios and understand the key findings of the stress tests. They would use these findings to develop and implement risk mitigation strategies. Risk concentration would be considered throughout the stress-testing process. Comprehensive stress-testing programs would consider the insurer's most material and significant risks (see appendices A and B).

DCAT has the following key elements:

- Development of a base scenario;
- Analysis of the impact of plausible adverse scenarios;
- Identification and analysis of the effectiveness of various corrective management actions to mitigate risks;
- A report on the results of the analysis and recommendations to the insurer's management and the board of directors or chief agent; and
- An opinion signed by the Appointed Actuary and included in the report on the financial condition of the insurer.

The principal goal of this process is the identification of possible threats to the financial condition of the insurer and appropriate risk management or corrective actions to address

those threats. The process arms the insurer with useful information on the course of events that may lead to capital depletion and the relative effectiveness of alternative corrective management actions, if necessary. Furthermore, knowing the sources of threat, it may be advisable to strengthen the monitoring systems where the insurer is most vulnerable.

The subsequent sections of this document cover the following:

- Method—this section provides guidance on the DCAT process, forecast period, and approaches to developing the base scenario and adverse scenarios, including ripple effects and integrated scenarios;
- Modelling—this section identifies key elements to be considered in building a DCAT model used to project the financial results under the base scenario and the adverse scenarios;
- Reporting—this section provides guidance on the key elements to be considered in reporting the results of DCAT, along with an outline of a typical report; and
- Appendices—Discussion and analysis of Life Insurer Risk Categories, and discussion and analysis of Property and Casualty Insurer Risk Categories.

2. Method

Process

As described in subsection 2520 of the Standards of Practice, the DCAT process is to include:

- Reviewing the recent and current financial position of the insurer;
- Running a base scenario and several adverse scenarios; and
- Reporting the results of the analysis, including details on at least three adverse scenarios.

It is fundamental to this process, and to the proper interpretation of the results, to understand that the projected capital position under various scenarios may well become inadequate during the forecast period, especially if the insurer's corrective management actions have not been assumed to be implemented on a timely basis as results emerge. This is not in itself an indication of current or anticipated difficulties. It is the specific degree and timing of capital depletion that indicate the risks to which the insurer is particularly sensitive. This, together with the results under the base scenario, would guide the insurer as to the necessity of revising the business plan, or preparing for contingencies.

To perform the DCAT, it is necessary to have an understanding of the minimum regulatory and supervisory target capital requirements. It is recommended that the Appointed Actuary verify the current regulatory requirements for his or her own insurer's situation, and review any applicable guidelines and educational notes.

Appendices A and B to this educational note provide additional details on the risk categories to be considered in developing the adverse scenarios. The risk areas posing the most significant threats would be examined in detail, including ripple effects.

Considering the role of the Appointed Actuary as defined in the Standards of Practice, the process to be followed in carrying out this analysis would generally be similar from one insurer to another, with some degree of uniformity in the standard of plausibility of scenarios and

approaches taken towards testing.

Approach

A typical approach would include the following steps:

- Review of operations for the recent years (normally at least three years) and of the financial position at the end of each of them.
- Development and modelling of the base scenario for the forecast period—as stated in the standards of practice, this would normally, but not always, be consistent with the insurer's business plan.
- Assessment of the risk categories and identification of those that are relevant to the insurer's circumstances. Some risk categories may not be relevant and would need no analysis whatsoever. Sensitivity testing may be used to determine the relevant risk categories for the insurer. Note that in the event of a new regulatory requirement or change in standards, it may be necessary to perform additional analysis, as the sensitivities to certain risk factors may change.
- Selection of plausible adverse scenarios requiring further analysis from the relevant risk categories:
    - Development and modelling of the plausible adverse scenarios that are likely to significantly impact surplus. The scenarios may be single-risk scenarios or integrated scenarios resulting from a combination of single-risk scenarios. The stress tests would apply across business and product lines and cover a range of scenarios, including non-historical scenarios. Sensitivity testing or stress testing may be used to determine the adverse scenarios.
    - Identification and modelling of associated system-wide interactions and feedback effects (ripple or second-order effects and macroeconomic effects) caused by a change in assumptions triggered by an adverse scenario.
    - Consideration of stress-testing the adverse scenarios. Reverse stress testing means a determination of just how far the risk factor(s) in question has to be changed in order to drive the insurer's surplus to negative during the forecast period, and perhaps evaluating if that degree of change is plausible. This type of testing may be useful in understanding interactions among risks and discovering hidden risks. Depending on the insurer's circumstances, the board of directors or chief agent and management may also be interested in situations that cross other break points, in which case further stress testing may be beneficial.
- Selection of at least three scenarios, from those modelled, showing the greatest surplus sensitivity for inclusion in the DCAT report. In addition, any modelled scenario that causes the insurer to fall below the supervisory target capital level during the forecast period would be subject to reporting.
- Identification of possible corrective management actions and the impact of these on the insurer's financial condition for each scenario included in the report. This identification process would facilitate the development of risk mitigation and contingency plans. Any possible constraints on corrective management actions would be taken into account.

- Identification of possible regulatory actions for each scenario that causes the insurer to fall below the supervisory target capital requirement. For best practices purposes, it would be preferable also to identify possible regulatory actions that may be triggered as a result of falling below any other thresholds set by the regulator(s).

The regulator might ask for other DCAT analyses to be conducted, including additional adverse scenarios and longer forecast periods.

Recent and Current Financial Position

Paragraph 2520.05 of the Standards of Practice states the following:

> The investigation would review operations of recent years (normally at least three years) and the financial position at the end of each of those years.

The review would include the statement of income and source of earnings (if available) for each year and the financial position at the end of each year, including the balance sheet and the results of the applicable regulatory tests of capital adequacy. The Appointed Actuary would analyze recent trends in these statements and would investigate the circumstances and key factors contributing to those trends. It is important for the Appointed Actuary to be aware of the reasons underlying any such recent trends.

Forecast Period

Paragraph 2520.15 of the Standards of Practice states the following:

> The forecast period would begin at the date of the most recent available fiscal year-end statement of financial position. The forecast period for a scenario would be sufficiently long to capture the effect of its adversity and the ability of management to react. The forecast period for a typical life insurer would not be less than five fiscal years. The forecast period for a typical property and casualty insurer would not be less than three fiscal years.

As stated in the Standards of Practice, for some adverse scenarios, it may be necessary to use a longer forecast period than the typical one suggested therein, in order to measure properly the full effect, including the ripple effects, of an adverse scenario on the financial condition of an insurer.

Materiality Standard

The standard of materiality would usually be less rigorous than that used for valuation of the insurer's policy liabilities and, if practical, the Appointed Actuary would discuss it with the insurer's management. In selecting a materiality standard, the Appointed Actuary would also give consideration to the following:

- The size of the insurer.
- The financial position of the insurer. The standard of materiality would become more rigorous in examining a base scenario where capital adequacy is closer to the target regulatory requirement.
- The nature of the regulatory test. For example, if the regulatory test is measuring required capital, the materiality standard might be expressed as a percentage of the

required capital.

For more guidance on materiality, refer to subsection 1240 of the Standards of Practice. (Please note that the same section is actually subsection 1340 up until January 31, 2018.)

Base Scenario

According to paragraph 2520.17 of the Standards of Practice:

> The base scenario would be a realistic set of assumptions used to forecast the insurer's financial position over the forecast period. Normally, the base scenario would be consistent with the insurer's business plan. The actuary would accept the business plan's assumptions for use in the base scenario unless these assumptions are so inconsistent or unrealistic that the resulting report would be misleading. The actuary would report any material inconsistency between the base scenario and the business plan.

The above standard does not necessarily imply that the projected financial results and future financial positions would be identical to the projections prepared at the time the insurer's business plan was approved. Typically, there is a difference between the timing of the starting balance sheet date for the DCAT analysis and the timing when the business plan was approved. During this time, events may have occurred that lead to definitive changes in assumptions including any ripple effects. As stated above, the projection of the future financial condition would reflect any material change that has occurred during this time, particularly if the DCAT analysis is done later in the year. Another possibility is that differences in opinion have emerged that lead to different base scenario assumptions from those in the business plan. The report would differentiate between factual changes and subjective changes between the base scenario and the business plan.

The projected financial results and future financial positions under the base scenario may continue to be consistent with the business plan while still recognizing the following:

- Distribution assumptions that differ from those expected in the business plan;
- Recent management decisions that may have not been anticipated or discussed in the business plan;
- Changes in the capitalization of the insurer not expected in the business plan; and
- The impact on future experience, where appropriate, due to actual recent experience, assumptions, or decisions as described above.

It is expected that significant deviations from assumptions in the business plan approved by the directors, as well as significant deviations in the results for the forecast period, would be documented in the report. Where differences in the base scenario are not due to a recent reforecast of the business plan, the Appointed Actuary would run the business plan as an additional scenario to ascertain the deviations in the results and would explain the rationale for the changes.

There will be some situations where capital injections are a basic part of an insurer's business plan. A simple example is when the business plan calls for an insurer to grow quickly with capital injections to support this growth. Another example is the case of an insurer that is

intending a major initiative in a new sphere of operations, and is intending to raise capital externally in support of that venture.

The Appointed Actuary would still be able to sign the usual DCAT opinion, even though the business plan and the DCAT base scenario call for capital injections, if the Appointed Actuary is satisfied that any such capital injections are the intent of the insurer making the injection, and has no reason to believe that such injections are not within the means of that insurer. In order to avoid presenting misleading results, clear reporting of assumptions made regarding capital injections is essential.

Plausible Adverse Scenarios

According to paragraphs 2520.18 and 2520.19 of the Standards of Practice,

> An adverse scenario is a scenario with an adverse outcome developed by stress-testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. An adverse scenario would be characterized as a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a scenario is both plausible and adverse. Plausible adverse scenarios vary among insurers and may vary over time for a particular insurer.
>
> The actuary would consider material, plausible risks or events to the insurer. Reverse stress-testing can help assess whether certain risk factors need to be tested, on the grounds that certain risk factors could never deteriorate to the point where they would be a threat to the insurer's financial condition. The actuary can thereby determine whether a material, plausible risk or event exists for the insurer over the forecast period.

Appendices A and B list and describe in detail the most common risk categories for life and P&C insurers respectively. Paragraphs 2520.20 and 2520.21 of the Standards of Practice state that "the actuary would consider threats to capital adequacy under plausible adverse scenarios that include, but are not limited to, the risk categories" that are listed in the appendices. The Appointed Actuary would consider whether the circumstances of the insurer result in the need to examine other risk categories.

For relevant risk categories, the Appointed Actuary would select one or more plausible adverse scenarios to be modelled. When stochastic models with reasonable predictability are available, an adverse scenario would be considered plausible if it reflects the 95th to 99th percentile of outcomes. Generally, a 95th percentile or greater result would be required for a scenario to be deemed adverse, but less than or equal to a 99th percentile for the scenario to be deemed plausible. However, in some circumstances the Appointed Actuary may feel it is appropriate to examine higher percentile outcomes. For risks where no stochastic models with predictive capabilities are available, the Appointed Actuary would consider the variability in historical results and credibility of data, among other things, in selecting plausible adverse scenarios. It is expected that each of the adverse scenarios selected would be in the range of a 95th to 99th percentile outcome.

An alternative approach for selecting adverse scenarios is reverse stress testing. This involves,

first, determining how far the risk factor(s) in question has to be changed in order to drive the insurer's surplus negative during the forecast period, and then evaluating whether that degree of change is plausible. Likewise, the Appointed Actuary may adjust the level of the risk factor to get a scenario result that is in the 95th to 99th percentile range. Depending on the insurer's circumstances, the board of directors or chief agent and management may also be interested in scenarios that cross other break points, in which case further stress testing may be beneficial.

Any differences between the business plan and the base scenario would, typically, also affect all adverse scenarios. The adverse scenarios would build on the assumptions and actual experience that is already reflected in the base scenario, particularly if the base scenario already reflects some adverse conditions that have been experienced during the first part of the year. If the base scenario does not reflect adverse experience already seen (because this is projected to improve in the future), the adverse scenarios would not be more favourable than the actual adverse impact already experienced by the insurer.

The Appointed Actuary would select three or more adverse scenarios from those modelled, showing the greatest surplus sensitivity to be examined in further detail, including more detailed reflection of the associated ripple effects. Any modelled scenario that causes the insurer to fall below the supervisory target capital level during the forecast period would be subject to further examination and reporting. Depending on insurer circumstances, it may be beneficial also to examine any adverse scenario from those modelled that puts the insurer very close to the supervisory target capital level. Again, the stress-testing approach, but now taking fuller account of ripple effects, may be used to assess sensitivity.

It is expected that the Appointed Actuary would report on the considerations for determining the adverse scenarios. It is expected that adverse scenarios posing the greatest threat to the financial condition would be discussed in more detail, including ripple effects and assumed corrective management actions.

The prerequisite for a satisfactory opinion is that the insurer will be able to meet its future obligations under all plausible adverse scenarios. The insurer's future obligations are met if it remains solvent at all projected dates. For testing most adverse scenarios, it would be appropriate to assume no additional capital arises from outside sources, beyond that called for in the business plan and base scenario. In adverse scenarios where the adverse factors are more under management's control (such as a scenario of much higher sales than planned), capital injections beyond those anticipated in the base scenario, or other corrective management actions, may be appropriate. It may also be appropriate to assume decreases in future projected capital distributions.

In order to avoid presenting a misleading result, clear reporting of assumptions is essential whenever there are additional injections, or decreases in capital distributions, that are deemed appropriate under an adverse scenario. In such adverse scenarios, reporting of DCAT results with and without the assumed additional injections is recommended.

Similarly to the situation with capital injections or distributions, there will be some situations where corrective management actions in response to adverse scenarios would be assumed to occur. An example would be deteriorating mortality or morbidity experience on group

insurance written on a one-year term renewable basis, or generally deteriorating loss ratios in certain lines of P&C insurance. This is not to say that all the adversity in poor claims would be assumed away through rate increases, but to assume no corrective management actions whatsoever in the form of premium rate increases, tightening up of underwriting, modification of benefit definitions, etc., would appear implausible (this is clearly different from long-term individual life insurance policies with fully guaranteed rates and provisions).

In order to avoid presenting a misleading result, clear reporting of assumed corrective management actions is essential and for each of the modelled adverse scenarios posing the greatest risk, the Appointed Actuary would report the results with and without the effect of corrective management actions.

Ripple Effects

Whenever an adverse scenario is modelled, it is common to consider associated ripple effects. A ripple effect is an event or incident that occurs when an adverse scenario triggers a change in one or more interdependent assumptions or risk factors. Ripple effects include the following:

- Adjustments to assumptions used in the base scenario that may no longer be appropriate in the adverse scenario being tested;
- The insurer's expected response to adversity;
- Policyholder actions;
- Regulatory actions, especially under any adverse scenario where the insurer fails to meet the supervisory target capital requirement;
- Rating agency actions, especially in adverse scenarios that result in significant changes in capital or surplus; and
- Likelihood of changes in planned capital injections or distributions.

Paragraph 2520.29 states that

> For each of the plausible adverse scenarios that would result in a threat to satisfactory financial condition, the actuary would identify possible corrective management actions that would lessen the likelihood of that threat, or that would mitigate that threat, if it materialized. These actions could include but are not limited to
>
> - Repricing the insurance products;
> - Suspending dividend payments, capital reductions, and transfers to the parent or home office, where applicable;
> - Raising additional capital or adopting an approved plan to raise additional capital if and when needed within a reasonable timeframe, or, in the case of a branch, requesting transfer of adequate funds from the parent company;
> - Strengthening risk management practices;
> - Mitigating the risk causing the capital shortfall; and
> - An increased level of monitoring and reporting with respect to the insurer's capital position.

Therefore, for each of the plausible adverse scenarios reported as part of the investigation, the results with and without the effect of any corrective management actions would be reported. The Appointed Actuary would describe the expected management response, so that the users may consider its practicality and adequacy.

The Appointed Actuary would inform management and report on potential regulatory actions and repercussions and would consider when it may be appropriate to model or calculate the financial impact of such actions. The financial impact of regulatory actions could be significant (particularly in situations where the insurer's ability to write new business is affected) and the board of directors or chief agent may be particularly interested in seeing the modelled impact in the DCAT analysis. The Appointed Actuary would consider actions that could be taken by the Canadian regulator(s) as well as by regulators in foreign jurisdictions. Such regulatory action and associated management response would consider the local assessment of solvency regardless of the insurer's worldwide solvency position as measured by Canadian regulatory standards.

If the impact of potential regulatory action has been modelled in a recent DCAT analysis, it may not be necessary to model the impact again in a current DCAT. This would be reasonable if the Appointed Actuary believes the scenario results have not changed materially and the regulator response and impact would be consistent with the earlier work.

Similarly, the Appointed Actuary would inform management and report on potential rating agency actions and possible repercussions but would not necessarily attempt to model or calculate the financial impact of such actions, unless the Appointed Actuary thought it would be necessary or useful as mentioned above for potential regulatory actions and repercussions.

Integrated Scenarios

An integrated scenario is a type of adverse scenario that results when two or more adverse scenarios are combined. The integrated scenarios could be a combination of low-probability scenarios, or low-probability scenarios combined with a higher-probability adverse scenario. The adverse scenarios to be combined may be based on correlated or uncorrelated risk factors but the resulting integrated scenario would be realistic and plausible with probability consistent with the 95th to 99th percentile range of the single-risk adverse scenarios selected. Reverse stress testing may also be used to assess the plausibility of the integrated scenario. It is expected that integrated scenarios would also be examined, including any associated ripple effects.

3. Modelling

Modelling normally is required to test the capital adequacy of the insurer under the base scenario and adverse scenarios.

Basic Requirements of the Model

Typically, the model reproduces key elements and pages from the financial statements, such as the following:

- Balance sheet

  - Assets (investments, reinsurance recoverables where appropriate, and other assets);
  - Liabilities (insurance contract liabilities, other liabilities, debt); and
  - Retained earnings/surplus.
- Income statement
  - Revenues/premium income;
  - Policy benefits/claims;
  - Expenses;
  - Income taxes;
  - Preferred share dividends; and
  - Investment income.
- Applicable regulatory measure of capital adequacy.

The model would be valid on an accounting basis. The Appointed Actuary would verify the validity of the model, specifically that:

Statement of income = cash flows + change in balance sheet items[1]

Financial results would be consistent among the various parts of the model as well as from year to year. This would be true for major items such as invested assets, policy liabilities, and surplus.

The insurer may use more than one model depending on the lines of business and jurisdictions. The modelling capability needs to be sufficiently flexible to enable the Appointed Actuary to assess risks within each risk category. The model may be deterministic or stochastic or a combination of these.

Model Validation in a Static Environment—Base Scenario

The validity of the model in a static environment is typically tested with the base scenario. Financial results would flow logically from one year to the next. Unless extraordinary changes are occurring in the insurance environment or in the business written by the insurer, it is expected that there would be continuity from the actual results of the most recent year to the first projected year and subsequent years. For example, it is expected that the following results would flow logically from year to year:

- Cash and invested assets;
- Policy liabilities;
- Surplus;
- Accounts payable;
- Accounts receivable;
- Deferred income tax amounts; and

[1] It is assumed that models will typically produce cash flows. It is possible that for some lines of business, alternative models are used (such as a trending approach, or source of earnings approach). In this case, the Appointed Actuary would use an alternative validity check.

- Major cash flow items.

When building a new model, a possible approach to check the validity of the model is to use as input the data prior to the most recent actual year, and use the experience of the last year to set the parameters. The result from the model could then be compared to the actual results. If the results between actual and projected are found to be sufficiently close, the model may be acceptable. The Appointed Actuary would determine in advance acceptable differences in assets, liabilities, surplus, premium, investment income, and net income.

When updating an existing model, a retrospective check on validity may be made. Each year after the actual results have been determined, differences between actual and base scenario model results would be justified.

Reasonableness in a Changing Environment—Adverse Scenarios

The model would be reasonable for all scenarios. Evaluating the difference between the results of two scenarios is a good way to assess the ability of the model to quantify changes in key results under different sets of assumptions. The Appointed Actuary would verify that the magnitude and direction of change in key elements of the model is consistent with the change in assumptions.

Models constructed for purposes of capital adequacy testing will have to be run repeatedly under many different adverse scenarios. They would be flexible and allow for changes to be made to all underlying assumptions that form the various adverse scenarios.

Stochastic vs. Deterministic Approach

The approach used to determine adverse scenarios may be stochastic, deterministic, or a combination of the two.

- Stochastic: certain risks are ideally modelled stochastically, such as those related to capital markets and those where the statistical loss distribution may be inferred and percentiles for results readily determined.
- Deterministic: the adverse scenarios are selected judgmentally by the Appointed Actuary, based on considerations such as variability in historical results or credibility of data.
- Combination: certain risks may be modelled stochastically and the results then used to derive a deterministic scenario that reproduces the desired stochastic results. The deterministic scenario would then be used as the adverse scenario for further analysis.

Examples of risks that are usually modelled stochastically include the following:

- Segregated fund—see the research paper Use of Stochastic Techniques to Value Actuarial Liabilities under Canadian GAAP (August 2001); and
- Exposure to catastrophe estimated from catastrophe modelling software.

Modelling of Ripple Effects

The model would allow for the quantification of ripple effects of adverse scenarios. There are two possible approaches to generate the ripple effects:

- Automatically generated by the model; or
- Manually created by the Appointed Actuary by modifying the appropriate assumptions.

For example, for a P&C insurer, the model could be built such that reinsurance rates will automatically increase in the year following a catastrophe—alternatively, the Appointed Actuary may manually modify the relevant parameters. For a life insurer, increases in new money interest rates may provide an incentive for some policyholders to lapse products that do not adjust, or slowly adjust, policy elements to changes in interest rates. The change in lapse rate could be modelled automatically based on changes in interest rates, or the Appointed Actuary could make the adjustment manually.

Organizational Considerations

With the DCAT, the Appointed Actuary would make an investigation of the insurer's financial condition. Although the modelling may be done by line of business, business unit, or geographical area, in order for the Appointed Actuary to report on the financial condition of the insurer, for regulatory reporting, the model results would be aggregated at the legal entity level.

Some assumptions are normally established at a high level, as they would be applied throughout the model. The following are possible examples:

- Economic parameters—interest rate levels, inflation, capital appreciation, and unemployment levels; and
- Demographic parameters—overall trend in mortality or morbidity for a life insurer.

It is expected that the assumptions underlying economic and demographic parameters be consistent within each scenario and between scenarios (unless being specifically tested by the scenario).

The DCAT model may be a powerful tool for risk management. In order to fulfil that function, it may be helpful to do the modelling at the levels where management decisions will be taken (e.g., business units, geographical areas, product lines). For life insurers, it may also be informative to examine changes to the sources of earnings associated with adverse scenarios. It is desirable that the model has the ability to focus on a particular line of business, division of the company, fund, or territory. Since it is likely that models constructed for DCAT purposes will also be used for corporate planning, the model would be sufficiently flexible to reflect any reasonable changes in insurer operations that management may want to test. Of course, these same changes might very well be the subject of additional scenarios in the DCAT process.

The objective in designing the structure of the model is to facilitate the projection of the insurer's operations under a number of different scenarios. The insurer being modelled operates within an industry that is itself influenced by, and operates within, a geographic and economic environment. The insurer will have its own legal structure, and, within that, a management structure around which it will plan and monitor its financial results. In organizing the model, it is necessary to reflect this structure and determine where constraints apply and at which level within the hierarchical structure of the model parameters are best set.

In designing the structure for the model, the size and complexity of the organization will

dominate. At a corporate level, capital infusions, shareholder dividend payments, income taxes, required surplus, investment of surplus, and corporate expenses, such as head office lease and overhead costs, would be modelled. In a single-product-line insurer, these may be combined with the product projection.

In the more complex organization, while similar issues arise as in the single-product-line insurer, the need to segment the model arises. This may be driven by size, or certain products may be more efficiently modelled using different tools or techniques. Alternatively, there may be a desire to analyze specific units separately.

In order to derive model segments, the Appointed Actuary may consider the following:

- **Management**—this usually reflects the management structure. The business is subdivided into units and cost structures and management reports have been developed around them. Existing plans are assembled and decision-making is centered on these units. These units will combine products and possibly investment units. Subsidiaries and foreign operations would fall into this category.
- **Product**—this is usually the smallest subdivision of business considered. For life insurers, cash flow projections are usually already available, and the model may be built using these as the foundation. For P&C insurers, products with similar characteristics may be grouped together.
- **Investment**—usually investment segments are defined based on asset categories. Investment income allocation follows the investment structure. This method of subdivision would combine a number of similar assets for investment purposes.

It may be desirable to have further breakdowns within a segment to take into consideration different investment strategies or instruments that are exposed to distinctly different risks. These will require at least separate parameters, and may need different modelling techniques or valuation methods.

The interrelationship of insurance and investment cash flows feeding the asset model is critical. Cash available needs to be established before investment decisions can be implemented.

For P&C insurers, the modelling of investment may follow the insurer's investment strategy rather than be product specific.

It may be desirable that calculation of taxes and required surplus be done at a divisional level of the model on a stand-alone basis. However, when results are consolidated, these will have to be redone on a consolidated basis. This implies that such data as necessary would be transferred to the corporate model to facilitate these calculations.

4. Reporting

Reporting the results of DCAT is an integral component of the whole process. Significant time and effort are usually required to develop the capabilities to do the projection and analysis. The organization will not receive rewards commensurate with this significant investment if the results of the analysis are not reported properly.

The primary purpose of the report is to communicate to the board of directors or chief agent

and the insurer's management

- The significant risks to which the insurer is exposed; and
- Possible actions that could be taken to reduce or eliminate the exposure to those risks.

The audience for this report is, as noted in paragraphs 2530.01 and 2530.02 of the Standards of Practice, the board of directors (or their audit committee if they so delegate) or the chief agent of a Canadian branch of a foreign insurer, as well as the insurer's management and the regulator. These individuals have different backgrounds and qualifications. The Appointed Actuary's challenge is to provide pertinent information in a comprehensible fashion to non-actuaries. The report would be in writing, but, as indicated in paragraph 2530.03 of the Standards of Practice, an additional oral report that permits questions and discussions is desirable. An interpretative report is more useful than a statistical report.

The Appointed Actuary would prepare a single report that goes to the board of directors or chief agent. However, in some cases it may be useful to prepare an analysis for discussion with management that is more detailed and/or technical than the report prepared for presentation to the board of directors or chief agent. Nevertheless, it is not appropriate for the management analysis to present findings different than those contained in the report to the board of directors or chief agent.

When there are a number of related legal entities in a group, another question arises: does the Appointed Actuary prepare a single DCAT report covering all legal entities or a separate report for each legal entity? Industry practice varies due to differences in circumstances, and the actuary will need to apply judgment. There are circumstances where a single DCAT report covering multiple related legal entities may be appropriate or required. In order for this to be the case, the following conditions would generally be met:

1. There is a common audience (or at least significant overlap) for the report for all legal entities involved;
2. The regulator(s) that supervise(s) the various legal entities agree(s) that a single consolidated report is acceptable or required; and
3. The DCAT report includes the consolidated results, but also includes relevant results at the legal entity level.

If a single consolidated report is produced, it would report on the financial condition overall and for each legal entity, and would identify any and all transfers assumed to occur between legal entities, including any risk-sharing agreements between legal entities or between a legal entity and a parent company, dividends to parent companies, capital infusions into legal entities, etc., whether in the base scenario or in the adverse scenarios. If a given legal entity requires a capital infusion in any of the scenarios, the report would include discussion on the likelihood of such infusions actually being made.

Additionally, the Standards of Practice and the regulators require DCAT reports to include a signed opinion on the insurer's financial condition. Paragraph 2520.09 of the Standards of Practice states

The insurer's financial condition would be satisfactory if throughout the forecast period,

- Under the base scenario, the insurer meets the supervisory target capital requirement; and
- Under the base scenario and all plausible adverse scenarios, the statement value of the insurer's assets is greater than the statement value of its liabilities.

The report need not include any commentary on the development and/or validity of the regulatory capital formula used. In most cases it will suffice to disclose the following:

- The applicable federal and/or provincial regulatory formula(s);
- For insurers subject to target capital requirements under multiple jurisdictions, the rationale for using the selected formula; and
- The target requirement used in the projections and the rationale. The Appointed Actuary may wish to refer to the insurer's primary regulator to identify the capital test and supervisory target capital requirements for the purposes of the DCAT standard.

It is recommended that the Appointed Actuary verify the current regulatory requirements for the insurer's situation. It is further recommended that the Appointed Actuary consult the capital guidelines and rules of the regulator(s) as well as its supervisory guide to assess when and what type of intervention may be initiated if the financial condition of the insurer is not considered appropriate.

The report and any presentation would reflect what is important to the insurer's board of directors or chief agent. The following is an illustrative outline of possible elements of a comprehensive DCAT report.

1. Executive Summary

The executive summary is useful to provide a high-level overview of the results of the DCAT analysis that is described in the report, including the following:

- Summary of the results of the base and selected adverse scenario results;
- Highlights of the most significant solvency risks and threats to satisfactory financial condition;
- Assessment of the events since the previous DCAT report was submitted;
- Commentary on management's action in response to the recommendations in the previous year's DCAT report, if appropriate;
- Recommendations or advice for management to mitigate or eliminate risk; and
- Other significant findings.

2. DCAT Opinion

The Appointed Actuary would include a signed opinion on the future financial condition of the insurer. The opinion, as per paragraph 2540.03 of the Standards of Practice, would be adapted by the Appointed Actuary to reflect the assumptions corresponding to the particular circumstances of the insurer.

3. Introduction

The introduction provides a forum to inform the user about the purpose and basis for the DCAT report, consisting of the following:

- Description of the role of the Appointed Actuary;
- Purpose and scope of the DCAT report; and
- Overview of the processes and methods used for DCAT analysis.

4. Capital Adequacy Measurement

The Appointed Actuary would explain the nature of the regulatory test used to measure the financial condition of the insurer, including the following:

- Definition of minimum and supervisory target capital requirement;
- Definition of satisfactory financial condition used in DCAT;
- Definition of what constitutes a threat to satisfactory financial condition;
- Description and summary of the insurer's current solvency ratios; and
- Materiality standard.

5. Background Discussion

This section of the report would provide an overview of the insurer and the economic environment during the forecast period, including such things as the following:

- Summary of the nature of the insurer's business, products, and target markets;
- Review of recent and current financial position;
- Discussion of any key events or initiatives affecting the insurer in the recent past and any associated expected future developments;
- Description of economic assumptions;
- Discussion of the current and expected market condition; and
- Discussion of prior year's DCAT results, recommendations, and corrective management actions, if appropriate.

6. Base Scenario

A clear description of the base scenario used in the DCAT analysis would include the following:

- Brief description of the model or process used to project the base scenario;
- Description of main assumptions, especially any capital injections or strategic initiatives;
- Discussion of consistency of the base scenario with the insurer's business plan; and
- Description of key financial results, including key income statement and balance sheet items, and capital test results. A desirable approach would be to display the results for each year in the projection.

7. Adverse Scenarios

This section of the report would provide detailed descriptions of the selected scenarios that pose the greatest risk to the insurer as well as any scenario, from those modelled, for which the insurer falls below the supervisory target capital requirement. An overview describing the process used to identify the scenarios would be useful. For each adverse scenario, the following items would be included where applicable:

- Description of the risk being tested, key assumptions used (including full descriptions of ripple effects), why the risk is significant to the insurer, and how this was determined;
- Comparison to prior year's DCAT, and consistency of the selected scenarios with the prior year's results (for example, if the scenarios have changed, this may be because the risks facing the insurer have changed, because other scenarios are being constructed and tested, or for some other reasons);
- Description of stress-testing results;
- Description of key financial results and the change from the corresponding base scenario results, to allow the users of the report to fully appreciate the consequences of the various scenarios;
- Description of any changes in the capital injections or distributions from those assumed in the base scenario, and results with and without these capital changes;
- Results with and without corrective management actions, if applicable, would be shown to aid the audience in appreciating the effectiveness of the risk mitigating strategy;
- Discussion of possible regulatory actions and repercussions if the scenario results fall below the target capital level, in the absence of any change in the base scenario capital injections, capital distributions, or other corrective management actions;
- Discussion of possible reactions of rating agencies and repercussions, when applicable, if the insurer's capital is severely strained;
- Discussion of changes in the adverse scenarios selected compared to the prior report's selection; and
- Disclosure of other risk categories considered in undertaking the DCAT analysis, together with brief comments of why they were not selected for detailed analysis.

8. Conclusions and Recommendations

Overall conclusions from the DCAT analysis would be presented, including a brief description and summary of the results of the base and selected adverse scenarios and highlights of the most significant risks to capital adequacy and threats to satisfactory financial condition. Any findings leading to follow-up actions would be discussed. It may also be appropriate, and consistent with best practices, to make one or more recommendations, particularly with respect to corrective management actions that are intended to better manage or mitigate risk exposures.

9. Appendices

The primary purpose of the DCAT report is to inform the insurer's board of directors, or chief agent, and management of potential threats to future financial conditions and possible actions that may mitigate those threats, so a qualitative report is best to achieve this end. However, it would be desirable for the Appointed Actuary to include some detailed financial results from the application of the DCAT model. Typically, the model creates key elements and pages from the financial statements, such as balance sheet, income statement, and regulatory measure of capital adequacy. Copies of such exhibits for the base scenario and each of the selected adverse scenarios for the forecast period allow users to review the DCAT results in more detail.

Appendix A – Discussion and Analysis of Life Insurer Risk Categories

Paragraph 2520.18 of the Standards of Practice states the following:

> An adverse scenario is a scenario with an adverse outcome developed by stress-testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. An adverse scenario would be characterized as a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a scenario is both plausible and adverse. Plausible adverse scenarios vary among insurers and may vary over time for a particular insurer.

The Appointed Actuary would develop an understanding of the sensitivity of the insurer's financial condition under each major risk category that is material to the insurer. Paragraph 2520.20 of the Standards of Practice states that "For life insurers, the actuary would consider threats to capital adequacy under plausible adverse scenarios that include, but are not limited to" the risk categories listed. This appendix outlines the major risk categories that would be considered in adverse scenario testing, and possible adverse trends and ripple effects for each. Each risk category section provides guidance about ripple effects (paragraph 2520.25 of the Standards of Practice), and possible corrective management actions are listed where relevant. A ripple effect is an event or incident that occurs when an adverse scenario triggers a change in one or more interdependent assumptions or risk factors. For example, post-event epidemic mortality may follow a catastrophic event. A change in mortality unrelated to the catastrophe would not be considered a ripple effect, but would be considered under a separate risk category.

Adverse scenarios could include the following:

- Gradual changes in experience that may or may not be detected for some time;
- Shock changes to experience; and
- Incorrect estimates of expected experience.

Recent industry and insurer historical experience and the outlook for the future could be considered in determining a range of possible future experience. The Appointed Actuary may want to look at historical data such as CIA or other economic statistical data as a guide to help determine the possible deterioration of the risk.

The Appointed Actuary may also consider systemic risk as a cause of some of the other risks. As an example, the failure or downgrading of one or more significant insurers in the market could result in marketing and/or reputational risk for the other insurers.

The Appointed Actuary may also consider liquidity and operational risks, likely as ripple effects associated with other adverse scenarios.

Liquidity is the availability of funds, or assurance that funds will be available, to honour cash outflow commitments (both on- and off-balance sheet) as they fall due. Liquidity risk is the inability to meet financial commitments as they fall due, through ongoing cash flow or asset sales at fair market value. Under some adverse scenarios, cash flow results may fall outside the

targets set in a liquidity risk management policy, in which case, examining ripple effects and possible management responses may be beneficial.

The Appointed Actuary may wish to consider operational risks, although the quantitative measurement of operational risk is still in its infancy and investigations may be more qualitative in nature. Systems and internal control procedures that may function well under normal day-to-day operations may begin to break down under adverse scenarios developed as part of DCAT. As well, business continuity plans may not consider scenarios that are as adverse as those developed as part of the DCAT analysis. Other sources of information that may be useful in examining operational risk might be rating agencies (e.g., new product risk) and the Society of Actuaries.

If a life insurer writes P&C business and the P&C business represents a material risk for the insurer, the Appointed Actuary would consider all risks covered in the P&C section of this educational note. If the P&C risk is not considered material by the Appointed Actuary, the Appointed Actuary would provide an explanation as to why it is not considered material. This is especially the case for some chartered life insurance companies operating in Québec.

Finally, the *Dynamic Financial Condition Analysis Handbook* of the Society of Actuaries is a good supplemental reference for risk areas and adverse scenarios that may be relevant for a given insurer, beyond those covered here.

1. Mortality Risk

Mortality risk can pose a significant risk to the capital adequacy of an insurer. Since annuity and insurance contracts tend to react very differently to adverse scenarios, the testing of those lines of business would be done separately.

For insurance business, adverse mortality may arise from a variety of causes, some of which include the following:

- An absolute increase in mortality rates, likely for a specific period of years and arising from an epidemic or other catastrophe;
- A steady and continued deterioration in mortality, arising from anti-selective lapse experience as new and more competitive products are offered and also due to a weakening in underwriting standards;
- A steady and continued deterioration in mortality versus that assumed in valuation and/or new business pricing assumptions, which may include mortality improvement assumptions that are not fully realized;
- A misestimation of expected experience due to a lack of credible experience data; and
- For death-supported insurance policies (i.e., policies where a decrease in mortality rates increases policy liabilities), a steady and continued decrease in mortality rates, arising from changes in medical treatments and/or changes in policyholder lifestyles, at a different rate than assumed.

For annuity business, adverse mortality may arise from a variety of causes, some of which include the following:

- A steady and continued decrease in mortality rates, arising from improvement in medical treatments and/or changes in annuitant lifestyles, at a faster pace than that assumed; and
- A misestimation of expected experience due to a lack of complete experience data.

The Appointed Actuary would consider whether such adverse mortality will be temporary or permanent in nature. Where appropriate, the impact would be reflected through a recalculation of policy liabilities.

The Appointed Actuary would consider possible ripple effects such as changes in sales levels and/or persistency following any pricing or benefit adjustments.

Possible corrective management actions could include the following:

- For adjustable products, changing premiums and/or benefits (delay before corrective management actions, partial adjustment for the adverse mortality experience);
- Adjusting the price of new business; and
- Seeking reinsurance solutions.

2. Morbidity Risk

Adverse morbidity includes the following:

- Increases in incidence rates for disability, medical, dental, critical illness, and other coverage; and
- Decreases in the rate of claim termination.

These may arise from a variety of causes, some of which include the following:

- A prolonged high-unemployment recessionary environment leading to both sharply increased incidence rates and low claim termination rates for disability;
- An increase in incidence rates without increasing death rates (for example, in the case of non-life-threatening epidemic or accident rates) or increased rates of diagnosis of critical illness as a result of sensitive diagnostic technologies;
- Improved treatment for diseases, such as AIDS, that decrease death rates for disabled lives;
- Court rulings in favour of the policyholder that limit the insurer's ability to adjudicate claims;
- Retrenchment of government social security programs;
- Escalation in dental and medical costs; and
- Misestimation of expected experience due to a lack of credible experience data.

The Appointed Actuary would consider possible ripple effects, such as the following:

- Constraints to rate increases as the industry reacts slowly in implementing renewal rate increases;
- Rate guarantees that limit or delay required rate increases;
- Increases in anti-selective lapses that may dampen—or nullify—the intended effect of

rate increases; and

- Adverse publicity/reputation damage arising from claim or underwriting practices associated with health/disability/sickness insurance, leading to decreased sales of new business.

Possible corrective management actions could include items such as the following:

- Increasing rates; and
- More active claims management.

3. Persistency and Lapse Risk

Policy persistency can pose a significant risk to the capital adequacy of an insurer. Generally, persistency risk can be divided into two distinct categories:

- Whenever the cash value exceeds the policy liability, the risk is that lapses or surrenders (hereinafter referred to as lapses) will exceed those assumed in the valuation assumptions.
- Whenever the policy liability exceeds the cash value, the risk is that lapses will be less than those assumed in the valuation assumptions. Such blocks of business are often referred to as "lapse supported".

In examining the persistency and lapse risks, it is prudent to assume that, because of anti-selection, both these adversities may happen concurrently. Generally, the appropriate level of lapses would be assessed for each product line.

Causes of adverse persistency and lapse include the following:

- Premium changes, including amount and payment pattern;
- Dividend scale changes;
- Changes in distribution system;
- A new product introduced to the market by a competitor;
- Changes in underwriting and/or qualification criteria for preferred/select classes;
- Changes in premium rates in the market;
- A sudden lack of confidence in the insurer that may be caused by a sudden downgrade by external rating agencies, combined with extensive publicity; and
- A misestimation of expected experience due to a lack of credible experience data.

Ripple effects for persistency and lapse risk could include the following:

- Worsened mortality or morbidity, which may be caused by anti-selection;
- Mismatch of asset and liability cash flows;
- Increased unit expenses;
- Worsened liquidity risk (for example, a "run on the bank" situation);
- Reduction in insurer's new business while, at the same time, the insurer could not proportionately reduce its expenses;
- Inability to borrow any external capital or debt and/or non-renewal of existing

borrowings at maturity; and

- Changes in the expected mix of business.

4. Market and Credit Risk

In determining plausible adverse scenarios for market and credit risks, the Appointed Actuary may want to review available historical data. Adverse scenarios may arise from a variety of sources, including the following:

- Changes in future rates of interest;
- Increases in losses from defaults on debt securities;
- Poor returns and/or declines in value of equities;
- Poor returns and/or declines in value of real estate;
- Counterparty defaults on derivatives;
- Loss or significant decline of value for other major asset categories;
- Concentration risks, including geography (e.g., impact of natural disasters), asset class, industrial sector, subsidiaries, individuals;
- Poor returns and/or declines in the value of a subsidiary;
- Fluctuations in currency values; and
- Market value deterioration in segregated fund assets.

The Appointed Actuary would test the impact of potential adverse scenarios on liabilities and surplus across all lines of business in aggregate. However, the potential corrective management actions will depend on the nature and characteristics of the various blocks of assets and liabilities.

When there is a mismatch between the cash flow pattern of assets and liabilities, there will be a need to reinvest positive cash flows, and to borrow or liquidate assets to fund negative cash flows. Future rates of interest can vary substantially and can adversely affect surplus. As a result, the value of derivatives will also be impacted. Where they are used as hedges, they will help mitigate adverse impacts.

In assessing the impact of changes in interest rates, the Appointed Actuary would consider both the current mismatch position as well as any possible mismatch in the future. This will depend on the maximum position allowed by the insurer's investment policy and the most aggressive position that has been taken in the past by the insurer.

Parallel and non-parallel shifts in the yield curve, both on a sudden and a gradual basis, would be considered. Stochastic modelling as well as deterministic scenarios could be considered. In addition to specific scenarios, the Appointed Actuary might also consider stress-testing the interest risk by determining whether some future interest rate scenarios would result in the insolvency of the insurer. The Appointed Actuary could also examine additional deterministic scenarios or more extreme tail results under stochastic modelling than are already reflected in the development of plausible adverse scenarios.

Changes in future interest rates will affect not only future rates of reinvestment and market values, but also the pattern of the cash flows. For example, this can occur with asset-backed

securities, callable bonds, and on policies with cash surrender values.

Future interest rates may also affect the spread that can be achieved on both new business and the fixed interest rate business where rate resets are being made.

Sustained low levels of interest rates could also affect the insurer's ability to support minimum long-term guarantees embedded in both insurance and annuity products.

Future interest rate levels will also affect the amount and mix of new business for guaranteed fund and segregated fund products. Likewise, interest rate levels will also affect the number of surrenders, transfers between funds, and shifts between portfolio average and new money products. The movement and financial exposure will depend on surrender charges and market value adjustments embedded in these products. Particular consideration would be given to assessing the effect of a "run on the bank" scenario.

For participating insurance, universal life, and adjustable premium business, considerations would include the following:

- The impact on the proportion of fixed income assets backing participating business and the duration of those assets, and that of key competitors;
- Dividend actions of competitors;
- The ability and willingness of management to maintain or change dividend scales;
- Reviewing premiums and charges of universal life products;
- Related policyholder actions such as surrender levels and potential litigation; and
- The impact on the level of new sales.

For segregated funds, drops in market value may affect the payment of benefits (or the likelihood of future payment of benefits) relating to the existence of guarantees of minimum segregated fund performance. Considerations would include the following:

- The extent of minimum performance guarantees provided on death or maturity;
- The extent of hedging operations or reinsurance to mitigate the risk;
- The existence of product features such as resets that will affect the risk; and
- The existence of volatile funds, fund-switching privileges, guarantees on a "per policy" basis, or high management expense ratios (MERs).

The Appointed Actuary may consider an integrated scenario in which a combination of the following events occur:

- A drop in the market value of debt securities based on a hypothetical increase in the yield curve;
- A decline in equities caused by a significant drop in the S&P/TSX index or any other significant stocks index;
- A significant decline in the value of real estate; and
- A significant decline in the value of the largest subsidiary.

The Appointed Actuary would consider how to reflect the effect of such events in determining policy liabilities and also consider expected pricing actions. The ripple effects could vary

depending on whether the results are insurer-specific or industry-wide.

The following are possible ripple effects:

- Exposed risk positions as a result of counterparty default;
- A ratings downgrade of the insurer that could, in turn, lead to decreased sales and increased surrenders;
- Liquidity issues or forced asset liquidation risk issues caused by large sustained credit-related losses either through defaults or severe asset downgrades;
- Counterparty defaults on derivatives;
- Decreased policy owner dividends that could lead to higher surrenders; and
- Increased disability claims frequency and severity due to deterioration of economic conditions.

Possible corrective management actions may include the following:

- A shift in the investment strategy;
- Dynamic hedging programs; and
- A review of premium rates.

5. Inflation Risk

Inflation can pose a significant risk to the capital adequacy of an insurer in many ways: a sustained increase in disability, pension or other benefits that are linked to the Consumer Price Index or similar price indices; a sudden increase in drugs and healthcare costs covered by health insurance policies; and an increase in absolute expenses and in unit operating costs. Inflation rates and market interest rates tend to be correlated. A high-inflation scenario would normally be assumed to accompany a high-interest scenario. However, the Appointed Actuary may also consider a scenario where high inflation is not accompanied by high interest rates.

The Appointed Actuary would consider possible ripple effects, such as the following:

- A decrease in real rates of return;
- A rapid and sustained increase in market interest rates;
- Constraints to rate increases as the industry reacts slowly in implementing renewal rate increases;
- Rate guarantees that limit or delay required rate increases;
- Decrease in the rates of disability claim termination when inflation is higher than wage increases or when inflation occurs during a recession or a period of rising unemployment.

Possible corrective management actions may include the following:

- Implementing rate increases, where possible;
- Reviewing the extent of the coverage and cost containment features;
- Reviewing the asset mix to increase real rates of return; and
- Reviewing policies, procedures, and staffing to control costs.

6. Reinsurance Risk

Reinsurance risk arises from a reinsurer's failure to meet its obligations to the insurer, or from a change in market conditions causing an increase in rates, inadequate limits, or otherwise inadequate or unaffordable coverage. In this context, the term reinsurer is intended to include both reinsurers, if the entity is a primary insurer, and retrocessionaires, if the entity is itself a reinsurer.

Reinsurance terms on individual life cessions may be guaranteed for the life of the underlying policy. The primary risks for a ceding entity are outlined below.

- **Insolvency of a reinsurer**—the ceding entity's exposure in the case where its principal reinsurer(s) become(s) insolvent would reflect an assumed realization percentage of assets to liabilities of the failed reinsurer, and any different treatment of various types of amounts owing from the reinsurer to the direct writer. The impact of a reinsurer's insolvency may be mitigated by the following provisions:
    - The right of offset of amounts owing under all treaties between the two companies;
    - The preferred position insurers will have relative to other creditors of a failed reinsurer;
    - The right of recapture in the event of the reinsurer's failure; and
    - Access to amounts on deposit or assets in trust (or other similar arrangements) with the insurer, or letters of credit in respect of an unregistered reinsurer.

  Under this scenario, it would normally be appropriate to assume that the business previously ceded to the insolvent reinsurer could be successfully reinsured elsewhere, but possibly on less favourable terms. However, there may be certain unique features regarding the business involved that would make securing such replacement of reinsurance difficult.

- **Increases in reinsurance rates**—where a reinsurer takes market-wide action impacting all of its insurers operating in similar markets, such action would not necessarily pose competitive issues, as these insurers would all be faced with an increase in reinsurance rates, possibly requiring repricing in a large segment of the marketplace. However, market-wide increases in rates may further adversely impact a particular insurer if it is operating with lower capital margins. In addition, where a reinsurer's action is targeted to one specific insurer because of poor experience, necessary repricing could affect the level of sales.

- **Reduction in reinsurance capacity available for the financing of new business**—this could result in an increase in reinsurance costs and/or constraints on the amount of new business growth of the insurer.

  Disputes over policy conditions—the Appointed Actuary could consider a dispute over reinsurance policy conditions which results in a principal reinsurer denying coverage for a significant class of business or category of claims; for example, terrorism exclusions.

7. New Business Risk

One of the uncertainties facing an insurer is the volume of new business that it will be able to write in the future. Volumes significantly different from those assumed can result in a capital position quite different from that expected, with negative outcomes. It may be equally important to examine both higher-than-expected and lower-than-expected levels of new business production. Even in the case where total business volumes have been estimated accurately, new business risk may still be present if the mix of business sold is different from that expected. An example would be entry into a new line of business or product.

There are several events that could lead to a significant reduction in premium volume written by an insurer, including the following:

- A financial rating downgrade of either the insurer itself or of an affiliated company (particularly the parent), or some other event (including cyber or operational risks) similarly damaging to the insurer's reputation;
- Entry of a new and strong competitor into an area where competition was previously weak, and/or increased competitiveness in the market due to higher usage of advertising by competitors;
- Loss of a key distributor or even an entire distribution channel previously responsible for the production of a significant portion of an insurer's business; and
- Loss of a key client, such as a large group client representing a significant portion of an insurer's group portfolio.

The most significant impact of lower-than-expected sales would be that the insurer is not able to cover its expenses, particularly when there is a large element of overhead and fixed expenses associated with marketing, underwriting, policy issue, and sales functions.

Ripple effects could include the following:

- Higher lapse rates on existing business (which could be significant, depending upon the event causing the reduction in new business);
- Poorer claims experience on the remaining business;
- Poorer coverage of maintenance expenses (resulting from both lower current sales as well as higher lapses on existing business);
- Possible ripple effects on other lines of business associated with the line of business that was initially affected (for example, distribution channels primarily involved in one line of business may contribute to significant future sales in another line); and
- Mix of business different from expected.

Possible corrective management actions could include items such as the following:

- Reviewing bonuses paid to agents and brokers;
- Diversification into more than one line of business;
- Control over non-variable expense levels; and
- Maintaining contingency action plans to be implemented in case one of these events occurs.

When the insurer has written a greater amount of new business sales than expected, this could lead to severe capital strain for the insurer. Events that could lead to a significant increase in premium volumes written by an insurer include the following:

- Unexpected success in a new product area or in beating previously stronger competition;
- Exit of a competitor from a product or market;
- Rate increase implemented by other companies leading to a fire sale for products still in the market at lower rates;
- Tightening of product features by other companies in the market; and
- Change in reinsurance arrangements leading to a higher-than-expected retention on new business.

Ripple effects could include the following:

- Problems with management control over policy issue, underwriting, field expenses, financial reporting, etc., due to rapid growth (this could lead to future problems in claims and expenses as competition eventually catches up and volume levels return to normal); and
- Future expected lapses, mortality, or morbidity could be different if sales are driven by old-generation products.

Possible corrective management actions would include the following:

- Putting capital-raising plans in place with a parent company or with external sources;
- Contingency plans to be able to handle the increased volumes of business;
- Reviewing rates and underwriting guidance;
- Reviewing the use of reinsurance to mitigate the need for additional capital; and
- Withdrawing a product or a line of business.

Normally, the base scenario would incorporate the new business projections of the insurer's business plan and associated expense levels. Alternate scenarios would be heavily dependent on the specific insurer, varying in particular with the kind of market the insurer serves and the distribution channel employed to reach it. However, any alternate scenario would reflect not only the change in new business levels, but also the impact on expense coverage and any other possible ripple effects.

8. Expenses Risk

Expense assumptions are a major consideration in the projected financial position of every insurer. These assumptions are unique in that, to some degree, management has a greater level of influence on expenses than on other assumptions. Even insurers who, historically, have aggressively managed their expenses to budgeted targets may face major expense issues in some situations such as an unexpected variation in new business growth, litigation, or other developments. Insurers practising strict management of budgets to meet expense levels included in pricing may have different results from insurers that manage budgets to other measures. The extent to which the insurer has demonstrated effective actions towards managing expenses in the past would be a consideration in how closely to relate expense levels

under adverse scenarios to expenses in the base scenario.

Adverse expense scenarios and related ripple effects to which an insurer's financial condition may be sensitive include the following:

- **Inflation**—a severe inflationary environment may cause a rapid increase in absolute expenses and in unit costs, as mentioned earlier for inflation risks. It is also possible to have future expense increases due to internal factors unrelated to future interest rates and inflation rates.
- **Technological obsolescence**—new technologies may be developed that deliver significant cost, delivery, or service benefits for those who can achieve economies of scale. For companies that do not make use of new technologies, expenses may rise relative to the competition. Such a scenario would also include the sales and termination impacts of technological obsolescence.
- **Court-awarded damages/data security or recovery**—potential high costs can result from court-awarded damages to plaintiffs relating to such matters as market conduct or the costs related to data security and recovery due to a cyber-attack or breach. Resulting ripple effects include damaged industry reputation, ratings downgrades, lower sales, and higher terminations.
- **Industry or guarantee fund assessments**—further industry failures can precipitate higher assessments to companies in the industry. Ripple effects from such failures can include damaged industry reputation, flight to quality, lower sales, and higher terminations in some instances.
- **Company structure**—holding-company expenses may be allocated to subsidiary companies based on historical or projected relative profits. This could lead to a major change in the level of expenses allocated to the insurer based on the performance of one of the other companies in the enterprise. Within a single insurer, methods of allocating overhead expenses to different business units may produce changing expense levels over time. In an enterprise that has several insurance companies or business units that provide services to one another, the impact of cross-billing would be considered.
- **Mergers and acquisitions, or assumptions of new business**—reductions in unit expenses after a merger, acquisition, or assumption of a new block of business may be delayed or lower than projected in the base scenario. Possible ripple effects could include the following:
    - Changes in product pricing;
    - Low sales; and
    - Higher lapses.

9. Government and Political Issues Risk

When the government makes changes to its policies or regulations, the implementation of such changes usually takes a considerable amount of time. This gives an insurer the time to analyze the impact and to take appropriate actions, if necessary. However, some changes can occur in a very short period and cannot be foreseen. There may also be cases where such changes are

effective retroactively without any grandfathering provisions. In such cases, the adverse scenario may be modelled in the first year if the scenario is plausible in that time period.

The Appointed Actuary would likely focus on changes that are being discussed or proposed by government entities. However, in some situations it may be beneficial to consider other changes, particularly for certain lines of business that have a greater sensitivity to political intervention, and if those lines of business are material to the insurer.

Examples of adverse events:

- An increase in premium tax rates;
- An increase in taxation rates for corporations (income tax or capital gains tax);
- A prolongation of temporary taxes;
- New restrictions on registered retirement savings plans or registered retirement income funds that would have a direct impact on the level of new business for those products;
- The possible entry of other financial institutions into the life insurance industry (e.g., due to revisions to the Bank Act) that would affect the amount of new business and could lower profit margins due to increased competition;
- Possible new restrictions on the investment practices of life insurance companies (e.g., a restriction on the use of derivative products for speculation or hedging);
- The introduction of a new or modified public healthcare policy, which could decrease new sales or in-force business (e.g., the introduction of pharmacare);
- A change in regulatory solvency standards that could increase the capital requirements for life insurers;
- A reduction in the government's need to borrow funds, which could affect the volume of government bonds available to the market;
- Political instability, which could lead to confiscation of assets, closure for new business, exchange controls, etc., particularly in foreign jurisdictions;
- Impact of cost shifting between public and private sectors or changes in coverage under public insurance plans;
- A change in law or regulation directly affecting an important product line (e.g., a change in tax law affecting the position of the policyholder, a change in capital or reserving requirements putting a particular type of product at a competitive disadvantage relative to products provided by other financial institutions or even other insurance providers, a restriction of information that may be used in underwriting);
- A change in legislation that restricts the use of some distribution channels; and
- Benefits, premiums, or rate adjustments subject to regulation.

For a specific scenario, possible ripple effects may include the following:

- Increased litigation costs;
- Forced liquidation of assets due to cash flow strains;
- Increased regulatory monitoring;
- Increases in the policy liability; and

- Increases in reinsurance rates and/or non-availability of reinsurance of new business.

10. Off-Balance-Sheet Items Risk

There are numerous off-balance-sheet items that may place an insurer at risk. Often these off-balance-sheet items arise from new or evolving industry practices that, in future years, do get recognized on the balance sheet by the Chartered Professional Accountants of Canada (CPA Canada), the CIA, or regulators. Therefore, the Appointed Actuary needs to be aware of any emerging risks that may be relevant to the insurer during the forecast period and assess their potential threat to the insurer's solvency.

Discussed below are examples of common off-balance-sheet items and their related risks that may be relevant to the insurer:

- **Derivative instruments**—the risks associated with derivatives include market risk, default risk, management risk, and legal risk:
    - Market risk includes marketability risk and basis risk. The marketability risk is the risk of not being able to cancel or unwind one's contract when desired or at a favourable price. Basis risk is the risk that the derivative's price behaviour does not act as expected, undoing the intended hedging benefits. The price behaviour of the instruments can change adversely when market conditions change. Market risk is best evaluated on a security basis and on a portfolio basis since some risks may not net against each other.
    - Default (or credit) risk is the risk that a loss will be incurred due to a default in making the full payments when due, in accordance with the terms of the contract.
    - Management risk is the potential for incurring material, unexpected losses on derivatives due to inadequate management supervision and understanding, systems, controls, procedures, accounting, and reporting.
    - Legal risk is the risk that the derivative agreement is not binding as intended.
- **Contingent liabilities or losses**—there are a variety of contingent liabilities to which an insurer may be exposed, such as tax, litigation, etc. The Appointed Actuary would consider the financial impact of adverse outcomes.
- **Letters of credit and pledged assets**—the insurer may be exposed to the risk that a lending institution defaults on payment under, for example, a letter of credit, or there is a call on assets pledged.
- **Capital maintenance agreements**—an insurer could be exposed to capital maintenance agreements it must honour for its subsidiaries (e.g., if an insurer has to guarantee a certain capital level in a subsidiary).
- **Employee and senior management benefits and liabilities not listed on the balance sheet (e.g., pension plans, stock option plans)**—this carries the risk of increasing costs.

11. Related Companies Risk

The related companies risk is the risk that the life insurance company may run into financial

difficulties as a result of its subsidiaries' or any other related entity's financial difficulties. The related companies risk may also arise from a decision made by the controlling company that may be unfavourable to the affiliate. For an insurer, being a part of a financial organization can be a potential source of strength, but it can also pose risks, particularly as a result of contagion. This risk could be easily integrated into other risk categories as a ripple effect and/or corrective management action or be considered as a separate scenario.

Factors to be considered include, but are not limited to the following:

- The impact on the insurer if financial support is no longer being guaranteed by the parent or the insurer is unable to access additional capital or is obliged to continue to repatriate funds;
- The effect on the insurer of an impaired parent or affiliate within the group, e.g., the impact on funding sources available, such as lines of credit, intra-group funding, or access to external capital;
- The effect on the insurer of the inability to sell or close in a timely manner a subsidiary that is in financial difficulty, e.g., where the subsidiary shares the same brand, systems, and other infrastructure as the insurer;
- The implicit support of group companies through the reallocation of group overheads towards the insurance entity;
- The pressure on the insurer to support other group members financially (e.g., capitalizing subs to meet their local supervisory target capital requirement);
- The pressure on the insurer to comply with group requirements rather than the firm's own strategy, e.g., with respect to investment mix;
- The effect on the insurer of a high degree of dependence on group resources (e.g., through intra-group outsourcing) to support the insurer's critical operations; and
- The effect on the insurer of a downgrade in the rating of the group or of other reputational issues.

Appendix B – Discussion and Analysis of Property and Casualty Insurer Risk Categories

Paragraph 2520.18 of the Standards of Practice states the following:

> An adverse scenario is a scenario with an adverse outcome developed by stress-testing the assumptions used in forecasting the business plan, including the determination of insurance contract liabilities, with regard to risk factors that may trigger potential threats to the insurer's financial condition. An adverse scenario would be characterized as a plausible adverse scenario if it is credible and has a non-trivial probability of occurring. The actuary may use percentile rankings of outcomes to determine whether a scenario is both plausible and adverse. Plausible adverse scenarios vary among insurers and may vary over time for a particular insurer.

Generally, it is expected that a plausible adverse scenario would be in the range of a 95th to 99th percentile of outcome. The Appointed Actuary would develop an understanding of the sensitivity of the insurer's financial condition under each major risk category that is material to the insurer.

This appendix outlines the major risk categories that could be considered. The Appointed Actuary would review and assess each of the risk categories and identify those that are relevant to the insurer's circumstances. Some risk categories may not be relevant and would need no analysis whatsoever. Stress testing may be used to determine the relevant risk categories for the insurer.

For each of the relevant risk categories requiring further analysis, the Appointed Actuary would assess all the scenarios listed to determine the plausible adverse scenarios that are likely to significantly affect surplus or that may cause the insurer to fall below the supervisory target capital during the forecast period. Stress testing may also be used to determine the relevant adverse scenarios.

The Appointed Actuary may also consider systemic risk as a cause of some of the other risks. As an example, the failure or downgrading of one or more significant insurers in the market could result in marketing and/or reputational risk for the other insurers. The Appointed Actuary may also consider liquidity and operational risks, likely as ripple effects associated with other adverse scenarios.

The Appointed Actuary would then develop and model the relevant adverse scenarios in detail. The relevant scenarios may be single-risk scenarios or integrated scenarios resulting from a combination of single-risk scenarios. Associated ripple effects triggered by an adverse scenario would also be identified and modelled as part of the relevant scenario. Examples of possible ripple effects are shown for each risk category in this appendix. Similarly, possible corrective management actions in response to an adverse scenario would be identified and modelled as part of the relevant scenario. Examples of possible corrective management actions are also listed for each risk category.

For any relevant scenario, the Appointed Actuary may consider reverse stress testing to determine the extent to which the risk factor(s) in question has to be changed in order to drive the insurer's surplus negative during the forecast period, or to determine the 95th to 99th

percentile. Depending on the insurer's circumstances, the board of directors or chief agent and management may also be interested in various levels of unsatisfactory condition, in which case further stress testing may be beneficial.

Once the relevant scenarios are tested, the Appointed Actuary would then select at least three plausible adverse scenarios from those modelled, showing the greatest surplus sensitivity for inclusion in the DCAT report. For any plausible modelled scenario that causes the insurer to fall below the supervisory target capital during the forecast period, the Appointed Actuary would discuss possible regulatory actions and repercussions with management and include the scenario in the report. Similarly, for any plausible modelled scenario that may trigger rating agency actions, the Appointed Actuary would discuss those with management.

Paragraph 2520.21 of the Standards of Practice states that "For property and casualty insurers, the actuary would consider threats to capital adequacy under plausible adverse scenarios that include, but are not limited to, the risk categories" that are listed in this appendix. The same is true of the possible adverse scenarios described for each risk category—they are illustrative but not exhaustive. For example, two types of risks not included are expenses risk and operational risk. Scenarios arising due to expenses risk are not common for most P&C insurers but may be significant for an insurer that is just starting up or winding down operations. Also, operational risk is an evolving area and the Appointed Actuary may be obliged to consider scenarios such as a major shutdown of operations or loss of a key individual in the organization.

If the P&C insurer manages life business and that life business represents a material risk for the insurer, the Appointed Actuary would consider all the risk categories covered in the life appendix of this educational note. If the Appointed Actuary does not consider the life risk important, an explanation would be provided indicating why it is not.

1. Claim Frequency and Severity Risk

An insurer's financial condition may be sensitive to increases in claim costs (including loss adjustment expenses). Future claims costs and loss ratios can differ significantly from the base scenario due to the following:

- **Single catastrophic event—**the Appointed Actuary would consider natural disasters (e.g., earthquakes, windstorms, floods, and hail), man-made events (e.g., terrorism) or any other single event affecting multiple policyholders that could have a material impact on the insurer's financial condition.
- **Single large claim—**the Appointed Actuary would consider the effect on the insurer's financial condition if its policy/account with the largest probable maximum loss (PML) or maximum exposed policy limits (if more appropriate) has a full loss event.
- **Multiple catastrophic events—**the Appointed Actuary would consider two or more events affecting multiple policyholders where the joint probability of the events is approximately equal to the probability of a single catastrophic event.
- **Multiple large claims—**the Appointed Actuary would select the size of claim that would be considered by the insurer to be large. The size would depend on the size of the insurer and will generally be smaller than the insurer's net retention. Using historical claims trended to current levels and adjusted for the insurer's current exposure, the Appointed Actuary would estimate the frequency and severity distribution of these

claims. The cumulative distribution may be estimated using assumed distributions or simulation techniques. The cumulative distribution would be constructed for net and gross claims. The adverse scenarios will generally be based on the difference between the claims in the 95th to 99th percentile range and the expected large claims (which are assumed to be already included in the base scenario).

- **Other frequency and severity—**the Appointed Actuary would model the loss ratio or frequency and severity of claims. Since catastrophes, large claims, and adverse development are considered in other scenarios, the Appointed Actuary could remove unusual claims from the data prior to their analysis. It is generally recommended that the variability of the normal accident year or underwriting year loss ratio, or the combined frequency and severity distribution, be examined. The Appointed Actuary may assume a distribution of claims and determine the 95th and 99th percentiles.
- **Social inflation—**social inflation refers to the claims inflation resulting from changes in the likelihood of claimants bringing suit, the size of awards, the standards of liability or the attitudes of claimants towards settlement of their claims. A significant sustained increase in the rate of social inflation would tend to lead to increases in the ultimate number or severity of unpaid liability claims and increases in the number or severity of future liability claims (both those related to the runoff of the unearned premium and those related to future new and renewal business). It would not normally be linked to a change in market interest rates.

Possible ripple effects may include the following:

- Insolvency of one or more reinsurers accounting for a significant portion of the insurer's reinsurance coverage;
- Increases in the policy liabilities related to current reinsurance contracts that are swing-rated, have variable commission, or require reinstatements;
- Loss of reinsurance coverage for remainder of term;
- Increases in reinsurance rates or non-availability of reinsurance at the next renewal;
- Post-event inflation (i.e., a significant temporary increase in the cost of labour and materials) following a catastrophe resulting in increases to the ultimate cost of unpaid claims as well as future claims;
- Post-event inflation in regions not directly affected by the catastrophic event;
- Forced sale or liquidation of assets;
- Increased Property and Casualty Insurance Compensation Corporation (PACICC) assessments resulting from failure of other insurers; and
- Rating agency downgrade.

Possible corrective management actions may include the following:

- Reviewing reinsurance coverage, type, or contract terms at renewal;
- Implementing rate increases, where possible;
- Restricting writing in hazard-prone areas;
- Reviewing the target mix by line of business or jurisdiction;
- Reviewing the type of products offered, such as writing more subscription policies; and

- Selling or reinvesting assets.

2. Policy Liabilities Risk

Policy liabilities are estimates of future amounts required to pay for claim liabilities and premium liabilities. Significant underestimation of these amounts may adversely affect the insurer's financial condition. For long-tail lines, estimates of the cost of future claims may depend upon the estimates of the unpaid claim liabilities. As such, underestimating the policy liabilities may have a concomitant effect on the estimates of future claims.

Where the underestimation of policy liabilities results from the occurrence of a catastrophe, this scenario would normally be covered under risk category 1 (claim frequency and severity risk). Where the underestimation results from legislative change(s), this scenario would normally be covered under a scenario from risk category 7 (government and political issues risk).

Examples of adverse scenarios to which an insurer's financial condition may be sensitive include the following:

- **Selection of inadequate loss development factors,** especially for new products or lines subject to legislative changes for which long-term development patterns are not available;
- **Class actions and other mass torts,** effective retroactively;
- **Change in mix of business** where a shift to longer-tailed lines of business may result in adverse development if selected loss development patterns do not reflect the shift;
- **Claims paid faster than assumed** in the base scenario, especially if large claims are paid earlier; and
- **Actual rate of return on investments supporting the liabilities significantly lower than assumed** in the base scenario.

Possible methods to determine the 95th to 99th percentile range include the following:

- Modelling the loss development factors with a statistical distribution and estimating the unpaid claims with factors at the 95th to 99th percentile; and
- Analyzing the insurer's history of actual to expected development of unpaid claims. This would generally be done for all lines of business combined, although an analysis by lines of business may be appropriate for an insurer where the mix of business has changed significantly over the years. It may be appropriate to use industry data for a new insurer, or if the insurer has a significant volume in new lines of business. In estimating the 95th to 99th percentile range, the Appointed Actuary may want to fit a distribution to the historical runoff data.

Stress testing may be useful to determine the magnitude of an understatement of unpaid claim liabilities or of an unanticipated large payment that would result in unsatisfactory financial condition for the company.

Possible ripple effects may include the following:

- The effect on actuarial present value for scenarios affecting undiscounted policy liabilities;
- Increases in the policy liabilities related to current and past reinsurance contracts that

are swing-rated, have variable commission, or require reinstatements;

- Increases in ultimate claim costs and claim expenses in connection with the runoff of the unearned premium for scenarios affecting claims liabilities;
- Increases in ultimate claim costs and claim expenses in connection with future new and renewal business;
- Forced sale or liquidation of assets; and
- Rating agency downgrade.

Possible corrective management actions may include the following:

- Settling claims faster by minimizing litigation or fast-tracking claims handling;
- Reviewing reserving and claim settlement guidelines;
- Implementing rate increases, where possible; and
- Reviewing the target mix by line of business or jurisdiction.

3. Inflation Risk

Claim costs and claim adjustment expenses are quite sensitive to inflation as it affects the insurance environment. Inflation in the insurance environment will generally be positively correlated with the general rate of inflation, as measured by the Consumer Price Index. There will, however, be changes in costs that will affect the insurance environment differently than the overall economy.

Claim costs may be affected by price increases extraneous to the insurance business. This excludes the effect of social inflation that is considered in risk category 1 (claim frequency and severity risk). Changes in inflation may be due to the following:

- **A significant, rapid, and sustained increase in the general rate of inflation—**in this scenario, inflation will lead to increases in the ultimate cost of settling claims (incurred and unpaid as well as future claims) as well as various related expenses. It would normally, but not always, be linked to a rapid and sustained increase in market interest rates.

  A scenario considering sustained inflation will tend to be based on a significant increase in trend over inflation projected in the base scenario. Ideally, the increase would be applied over the entire projection period. This would tend to be accompanied by an increase in market interest rate.

  A possible method to determine an adequate level of increase in the inflation trend would be to look at historical changes in the CPI over three-year periods over time. The length of time considered would ideally be long enough to capture a large range of situations that can be applied to the projection period. The level of change in market interest rate would be based on the reasoning described in risk category 6 (investment risk).

- **A significant temporary increase in the cost of labour and materials following a catastrophe or other major event—**in this scenario, the ultimate cost of settling claims would increase following a catastrophe or other major industry event that did not directly affect the insurer. This scenario differs from the ripple effect for catastrophic

event(s) in risk category 1 (claim frequency and severity risk) because the increased cost affects claims that were not the result of the event.

- **A severe recession in the economy**—in this scenario, economic conditions may lead to increases in the ultimate number of and cost of settling claims and loss adjustment expenses, for both current and future claims. This may be linked to a sustained increase in general inflation, unemployment level, or market interest rates.

Possible ripple effects may include the following:

- A rapid and sustained increase in market interest rates;
- Increase in operating expenses; and
- Increase in reinsurance rates on current swing-rated contracts and on future contracts.

Possible corrective management actions may include the following:

- Reviewing reinsurance coverage, type, or contract terms at renewal;
- Implementing rate increases, where possible;
- Reviewing the target mix by line of business or jurisdiction;
- Reviewing the type of products offered;
- Selling or reinvesting assets; and
- Adjusting the insurance to value or cost calculator.

4. Premium Risk

An insurer's financial condition may be affected by differences between actual business volume, type, or mix, and the respective assumptions in the business plan.

There are several categories of events that could have considerable impact on the volume, type, mix, and profitability of business written by an insurer. Some of these events are related to the underwriting and marketing environment and can result in unexpected reductions or increases in premium volume. Inadequate pricing may also trigger significant changes in the premium volume or mix of business and is likely to compound the effect of scenarios triggered by other events. Any significant change in premium volume resulting from government or political actions would be considered under risk category 7 (government and political issues risk).

Stress-testing may be useful to determine the magnitude of premium volume that would result in an unsatisfactory financial condition for the insurer. Consideration would be given to the assumptions in the base scenario, and vulnerability of the insurer to the selected event given its size, marketing plan, and strategies.

Premium Volume Significantly Lower than the Base Scenario

The reduction from the planned premium volume can be the result of lost business, reduced or inadequate rate level for some market segments, and/or uncompetitive pricing in some market segments.

Some events resulting in a significant reduction in premium volume include the following:

- Entry of a new and strong competitor into a market;

- Increased competitiveness in a market;
- Loss of a key distributor or even an entire distribution channel;
- Loss of a key client;
- Action by any influential entity (consumers, distributors, rating agencies, etc.) that affects the insurer's reputation or growth negatively;
- Inability to implement planned premium rate increases; and
- Non-competitive premium rates.

Possible ripple effects may include the following:

- An increase in loss ratio due to a soft market, inadequate pricing, or lost business that is relatively more profitable than the retained business;
- An increase in the fixed expense ratio;
- An increase for certain types of expenses (for example, more advertising costs to counter a very aggressive competitor);
- A shift in portfolio mix since the lost business could have a very different average premium or could be primarily from a specific market segment;
- An increase in reinsurance costs as a percentage of subject premium; and
- Forced sale or liquidation of assets.

Possible corrective management actions may include the following:

- Reducing personnel or slowing down hiring;
- Identifying other distributors for the insurer's product(s);
- Implementing rate changes, where possible;
- Changing reinsurance coverage, type, or contract terms at next renewal;
- Underwriting actions in markets subject to increased competition;
- Changing the target mix of business of future lines of business; and
- Adjusting the investment portfolio to mitigate cash flow strains.

Premium Volume Significantly Higher than the Base Scenario

An increase from the planned premium volume can be the result of unexpected new business or inadequate (i.e., too competitive) rate level for some market segments.

Some events resulting in a significant increase in premium volume include the following:

- Withdrawal or failure of major competitors from a market;
- Appointment of a key distributor;
- Unexpected new business from a large client;
- Any action by any influential entity (consumers, distributors, rating agencies, etc.) that affects the insurer's reputation or growth favourably;
- Unexpected success in a new product area, or against previously stronger competition; and
- Premium rates set too low compared to the competition.

Possible ripple effects may include the following:

- A higher loss ratio on new business due to inadequate pricing;
- A shift in portfolio mix since the new business could have a much different average premium or could be primarily from a specific market segment;
- Higher expenses (hiring of employees, increased overtime, etc.) in the short term as well as in the long term;
- Increased PACICC and pool assessments; and
- Increased reinsurance costs.

Possible corrective management actions may include the following:

- Implementing rate changes, where possible;
- Underwriting actions (e.g., restrictions on new business, withdrawal) in unprofitable markets;
- Reviewing the distribution channels;
- Reducing certain types of expenses (for example, advertising costs); and
- Using reinsurance to mitigate capital strain.

5. Reinsurance Risk

An insurer's financial condition may be adversely affected by a reinsurer's failure to meet its obligations to the insurer, or from a change in market conditions causing an increase in reinsurance rates, inadequate reinsurance limits, or otherwise inadequate or unaffordable reinsurance coverage. In this context, the term reinsurer is intended to include both reinsurers, if the entity is a primary insurer, or retrocessionaires, if the entity is itself a reinsurer.

Adverse scenarios arising from reinsurance risk include the following:

- **Reinsurer insolvency**—the impact of reinsurer insolvency would reflect an assumed "recoverable percentage" of assets to liabilities of the failed reinsurer, and any different treatment of various types of amounts owing from the reinsurer to the ceding entity. The impact may be mitigated by right of offset to amounts owing under all treaties between the two entities, by the preferred position insurers will have relative to other creditors of a failed reinsurer, by the special termination clause in the event of failure, and by any amounts on deposit or in trust with the insurer, or letters of credit in respect of an unlicensed reinsurer. It would normally be appropriate under this scenario to assume that the business currently ceded to the failing reinsurer could be successfully reinsured elsewhere (possibly on less favourable terms), unless there is something unique about the business involved that would make securing such replacement reinsurance difficult.

  Reinsurer insolvency can be due to the circumstances of a specific reinsurer (such as undervaluation of older liabilities), or it could be systemic to the industry due to a major global event or series of global events (e.g., terrorist attack, natural disaster, etc.).

  In developing this scenario, the Appointed Actuary would take into account the following considerations:

  - Affiliated versus non-affiliated reinsurers—the Appointed Actuary may be better able to assess the likelihood of insolvency if a reinsurance arrangement consists of an inter-company pooling agreement or reinsurance with an affiliated company, as opposed to external reinsurance;
  - Rating of reinsurers—reinsurers with weaker rating from rating agencies could be more likely to fail than reinsurers with stronger rating;
  - Registered versus non-registered reinsurers—although non-registered reinsurers may have deposits in Canada covering known liabilities, access to funds to cover unknown liabilities may be more difficult to secure; and
  - Concentration of reinsurance—this involves the failure of a reinsurer with a significant share of the ceded liabilities.

  Stress testing may be useful to determine a plausible scenario. The exposure to the reinsurers would be calculated in terms of unpaid claims, including incurred but not reported (IBNR), but less amounts payable to, and security held from, the same reinsurers. The Appointed Actuary may evaluate the impact of default of some of these reinsurers based on level of participation, financial stability, and rating.

- **An increase in reinsurance rates or a reduction in reinsurance commission**—this scenario considers situations where reinsurance action is systemic in nature, due to the overall insurance environment. This is in contrast with ripple effects considered in risk categories 1, 2, and 4, where the reinsurer action is taken in response to situations unique to the insurer, such as poor experience.
- **Reduction in capacity**—this scenario contemplates a reduction in the availability of reinsurance over the forecast period.
- **Disputes over policy conditions**—the effect on an entity of disputes with reinsurers may be similar to the effect of reinsurer insolvency. To differentiate between these scenarios, however, the Appointed Actuary would consider a dispute that results in a principal reinsurer denying coverage for a significant class of business or category of claims, such as a terrorism occurrence.

Possible ripple effects may include the following:

- Increase in reinsurance rates arising from the need to obtain replacement reinsurance coverage; and
- Reduced availability of reinsurance.

Possible corrective management actions may include the following:

- Changing the reinsurance structure;
- Diversifying participants on the reinsurance program;
- Retaining a greater proportion of business to decrease the reinsurance cost;
- Changing reinsurers; and
- Reducing primary policy limits.

6. Investment Risk

Changes in economic conditions have the potential to significantly impact an insurer's financial situation. For example, rapid changes in interest rates, exchange rates, and economic growth rates can affect the insurer's financial condition by leading to concomitant changes in the following:

- The market value of debt and equity securities;
- The default rates on debt securities;
- The match between cash flows from assets and liabilities; and
- The creditworthiness of derivative counterparties.

Adverse scenarios in respect of deterioration of asset values may come from a variety of sources, including the following:

- A significant change in the yield curve;
- An increase in the default rate on debt securities;
- A decrease in the returns and/or value of equities;
- A decrease in the returns and/or value of real estate;
- A decrease in the returns and/or value of subsidiary;
- A significant change in foreign exchange rates; and
- A decrease in the returns and/or value of other major asset categories.

The Appointed Actuary may consider integrated scenarios involving a combination of these events. For example, in the event of a severe market shock, the creditworthiness of derivative counterparties may go down at the same time the exposure in the re-margining agreement goes up. A period of market turbulence or a shock to market liquidity would be among the scenarios considered.

In selecting appropriate assumptions to determine the 95th to 99th percentile range, the Appointed Actuary may want to refer to the CIA's Report on Canadian Economic Statistics. For example, the Appointed Actuary may base his or her assumption on the largest one-year decline in equities, or the largest three-year average increase in interest rate. It is important, however, to keep in mind the starting position of the current economic environment. Alternatively, the Appointed Actuary may use a stochastic model for economic changes, if one is available.

Possible ripple effects may include the following:

- Forced sale or liquidation of assets;
- Significant positive or negative cash flows impacting the insurer's liquidity position;
- Negative change on derivative positions;
- Default by counterparty on derivatives;
- Rating agency downgrade;
- A liquidity crisis caused by large, sustained default losses;
- Increase in the frequency or severity of claims due to the deteriorating economic

conditions; and

- Change in discount rate used for calculating actuarial present value of policy liabilities.

Possible corrective management actions may include the following:

- Selling or reinvesting assets;
- Changing the investment strategy;
- Repositioning derivative tools;
- Reducing the amount of business underwritten;
- Implementing rate increases, where possible; and
- Reducing costs through layoffs, consolidation of branch offices, or other similar actions.

7. Government and Political Issues Risk

The implementation of a government's policies or regulations usually takes a long time. This normally allows an insurer time to analyze the impact(s) and take the appropriate actions. Time for analysis and action may not be available where implementation of changes occurs quickly, is not foreseen, or is made retroactively effective. In these cases, the adverse scenario may be modelled in the first partial year modelled if the scenario is plausible in that time period.

Adverse scenarios to which an insurer's financial condition may be sensitive include the following:

- A rate freeze or rollback of rates by a government body or regulator on lines of business and jurisdictions in which rates are subject to regulatory approval;
- A change to regulations regarding use of rating variables that may impact the adequacy of rates and availability of insurance on lines of business and jurisdictions in which rates are subject to regulatory approval;
- A change to legislation that prescribes levels of insurance coverage, such as automobile accident benefits;
- An increase in taxation rates or rules for corporations, such as income tax, capital gains tax deductions, or offshore income;
- Nationalization or privatization of a line of business in a jurisdiction;
- A change to legislation that creates or restricts distribution channels;
- A change in regulatory solvency standards that could increase the capital requirements for property and casualty insurers; and
- Political instability that leads to confiscation of assets, closure for new business, exchange controls, etc., particularly in foreign jurisdictions.

Possible ripple effects may include the following:

- Deterioration of loss ratios;
- Increased litigation costs;
- Reduced availability of insurance to the public;
- Increased volume of industry pools resulting in increased assessments;
- Increased regulatory monitoring, or filing of rates;

- Forced sale or liquidation of assets;
- Problems with reinsurance coverage;
- Increased policy liabilities related to current reinsurance contracts that are swing-rated, have variable commission, or require reinstatements; and
- Increased reinsurance rates or non-availability of reinsurance at the next renewal.

Possible corrective management actions may include the following:

- Reducing the volume of business written by restricting sales or broker force, freezing new business, or withdrawing from the jurisdiction or line of business;
- Creating or expanding a separate company or distribution channel;
- Reviewing the target mix by line of business or jurisdiction; and
- Reviewing reinsurance coverage, type, or contract terms at next renewal.

8. Off-Balance-Sheet Items Risk

There are numerous off-balance-sheet items that may adversely affect an insurer's financial condition. Often these off-balance-sheet items arise from new or evolving industry practices that, in subsequent years, do get recognized on the balance sheet by the CPA Canada, the CIA, or regulators. Therefore, the Appointed Actuary needs to develop awareness of any emerging risk that may be relevant to the insurer during the forecast period and assess its potential threat to the insurer's financial condition.

Possible scenarios of off-balance-sheet items and their related risks include the following:

- **Structured settlement—**when a property and casualty insurer purchases an annuity to satisfy a structured settlement, it is exposed to the credit risk associated with the insolvency of the insurer selling the annuity.
- **Contingent liabilities or losses—**there are a variety of contingent liabilities to which an insurer may be exposed, such as tax, litigation, etc.
- **Letters of credit and pledged assets—**the insurer may be exposed to the risk that a lending institution defaults on payment under, for example, a letter of credit, or a call on assets pledged.
- **Capital maintenance agreements—**an insurer could be exposed to capital maintenance agreements it must honour for its subsidiaries.
- **Derivative instruments—**the risks associated with derivatives include market risk, default risk, management risk, and legal risk and are discussed in more detail below:
    - Market risk includes liquidity risk and basis risk. Liquidity risk is the risk of not being able to cancel or unwind one's contract when desired or at a favourable price. Basis risk is the risk that the derivative's price behaviour does not act as expected, undoing the intended hedging benefits. The price behaviour of the instruments can change adversely when market conditions change. Market risk is best evaluated on a security basis and on a portfolio basis since some risks may not net against each other.
    - Default (or credit) risk is the risk that a loss will be incurred due to default in

making the full payments, when due, in accordance with the terms of the contract.

  - Management risk is the potential for incurring material, unexpected losses on derivatives due to inadequate management supervision and understanding, systems, controls, procedures, accounting, and reporting.
  - Legal risk is the risk that the derivative agreement is not binding as intended.

- **Pension Underfunding**—the insurer could be exposed to the potential impact of unfunded liabilities.

Possible ripple effects may include the following:

- Forced sale or liquidation of assets; and
- Significant positive or negative cash flows, affecting the insurer's liquidity position.

Possible corrective management actions may include the following:

- Selling or reinvesting assets;
- Changing the reinsurance strategy;
- Repositioning of derivative tools; and
- Reducing costs through layoffs, consolidation of branch offices, or other similar actions.

9. Related Companies Risk

It is possible that adverse scenarios in a related company may have a concomitant impact on the insurer's financial condition. The choice of adverse scenarios for this risk will tend to be based on actual company organizational structures. Related company risk may also be considered in creating integrated scenarios with other risk categories.

In this context, an insurer's financial condition may be sensitive to the following:

- **A reduction in reliance on the parent company for financial support—**typically, such a situation would arise when a group's financial resources are needed to support a financially impaired parent or affiliate company;
- **An increase in the provision of financial support to the parent—**in this situation, funds the company expected to have for its own purposes are now needed to support other entities in the group;
- **A high level of dependency on group operational resources—**this situation would consider disruptions in services (computer systems, actuarial, etc.) provided by related companies; and
- **A rating agency downgrade reflecting difficult financial conditions at the group level.**

Possible ripple effects may include the following:

- Management focus on group rather than company priorities, potentially delaying remedial action;
- A need to provide for service disruptions; and
- Regulator action to protect local policyholders.

Possible corrective management actions may include the following:

- Finding alternative sources of funds for operational support;
- Adjusting premium volumes and mix of business;
- Reviewing reinsurance coverage purchased to mitigate capital strain;
- Reviewing the target mix by line of business or jurisdiction;
- Reviewing type of products offered; and
- Selling or reinvesting assets.

Canadian Institute of Actuaries
Institut canadien des actuaires

Educational Note

Use of Models

Modelling Task Force

January 2017

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Members should be familiar with educational notes. Educational notes describe but do not recommend practice in illustrative situations. They do not constitute standards of practice and are, therefore, not binding. They are, however, intended to illustrate the application (but not necessarily the only application) of the Standards of Practice, so there should be no conflict between them. They are intended to assist actuaries in applying standards of practice in respect of specific matters. Responsibility for the manner of application of standards of practice in specific circumstances remains that of the members.

MEMORANDUM

To: All Fellows, Affiliates, Associates, and Correspondents of the Canadian Institute of Actuaries

From: Pierre Dionne, Chair
Practice Council

Bob Howard, Chair
Modelling Task Force

Date: January 26, 2017

Subject: **Educational Note—Use of Models**

A revised draft educational note was released to members on July 26, 2016. The task force thanks those who submitted comments. Based on the comments, there are a few clarifications and corrections in the final educational note below, but there are no major changes in thrust.

The subject that was commented on most frequently related to the definition of what is and what is not a model. Some objected to the classification found in section 1.2. The task force acknowledges that there is necessarily some vagueness in the definition of a model and that actuarial judgment is required, particularly near the border of what is and what is not a model. The task force believes that the main distinction contained in the definition is whether there is a simplification of reality as opposed to a calculation of reality itself.

In accordance with the Canadian Institute of Actuaries' (CIA) Policy on Due Process for the Approval of Guidance Material Other than Standards of Practice and Research Documents, this educational note has been prepared by the Modelling Task Force, and has received final approval for distribution by the Practice Council on January 24, 2017.

As outlined in subsection 1220 of the Standards of Practice, "*The actuary should be familiar with relevant Educational Notes and other designated educational material*." That subsection explains further that a "practice that the Educational Notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation." As well, "Educational Notes are intended to illustrate the application (but not necessarily the only application) of the standards, so there should be no conflict between them."

The members of the task force are Bob Howard (Chair), Michelle John, Pierre Laurin, Michelle Lindo, Simon Nelson, and Brenda Perras.

PD, RH

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1 Background

1.1 Reference to Exposure Draft

This educational note is being released at the same time as a change to the General Standards on the use of models. This educational note is intended to be read along with the new standards. The standards address the main principles involved in an actuary's use of models. The educational note expands on the principles to set out more specifics of how an actuary can ensure that good practice is being followed in the use of models. The intent of this educational note is to be principles-based rather than rules-based. The examples are intended to illustrate the principles rather than to describe a single correct way to do things.

The definitions in the Standards of Practice related to models are repeated here for convenience.

.31.1 Model is a practical representation of relationships among entities or events using statistical, financial, economic, or mathematical concepts. A model uses methods, assumptions, and data that simplify a more complex system and produces results that are intended to provide useful information on that system. A model is composed of a model specification, a model implementation, and one or more model runs. Similarly for "to model". [*modèle*]

.31.2 Model implementation is one or more systems developed to perform the calculations for a model specification. For this purpose "systems" include computer programs, spreadsheets, and database programs. [*implémentation du modèle*]

.31.3 Model risk is the risk that, due to flaws or limitations in the model or in its use, the actuary or a user of the results of the model will draw an inappropriate conclusion from those results. [*risque de modélisation*]

.31.4 Model run is a set of inputs and the corresponding results produced by a model implementation. [*exécution d'un modèle*]

.31.5 Model specification is the description of the components of a model and the interrelationship of those components with each other, including the types of data, assumptions, methods, entities, and events. [*spécifications du modèle*]

1.2 Examples of Models

In most cases, it is clear what is and is not a model, but in some cases there can be uncertainty. However, the distinction is not necessarily important. An actuary ensures that all calculations are done with "due skill and care". It would not be good practice to use any computer program without considering whether it was sufficiently accurate and suitable for the task.

The main distinction in the standards between a model and a calculation that is not a model is in the documentation required. The standards normally require some documentation for choosing and using a model. There is no requirement in the

standards of practice that an actuary keep any particular documentation of a calculation that is not a model, but for more significant or complex calculations, it may be prudent to retain some documentation.

Whether a model or not, the same standard of care in accuracy applies.

The two lists below are intended to give some examples of what is or is not a model, but neither list is definitive nor exhaustive. Their purpose is to clarify the definition, but ultimately classifying as a model or not will require judgment.

Examples that are not Models

1. Adding a column of numbers. There is no simplification of reality. The sum is reality itself. The same is true whether there are a few numbers or so many that they could not possibly be added manually.
2. Calculating a least-squares regression line. A regression line may be used in a model, but calculating a regression line itself is not a model.
3. Spreadsheets used to summarize and reformat information, typically for reporting purposes. The input may come from models, but the summarizing is not a model.
4. Calculating a life annuity factor where the formula and assumptions are prescribed, for example, by standards or regulation. This is not a model because the calculation does not allow for any discretion.

Examples that are Models

1. Calculating a life annuity factor where the actuary makes assumptions or where the actuary makes decisions about simplifications. This stands in contrast to example 4 above.
2. Dynamic Capital Adequacy Testing. This is a very complex model that may contain several submodels.
3. Generating a series of random events. The generation of a series of pseudo-random numbers is the application of an algorithm and not a model, but when those numbers are used to represent reality, the whole would be considered a model.
4. Creation of loss development factors (LDFs, also known as chain ladder) to estimate the ultimate incurred losses. While a simple model, the estimation of the age-to-age factors and the application of the ultimate factors are considered a model.
5. Generalized linear model (GLM) techniques used for segmenting an automobile book of business.

1.3 Use or Development

This educational note and the associated standards deal with the use of models but not with the development of models. There are robust bodies of knowledge around coding practices, change management, and process management that are typically employed in developing and modifying systems (including models), and actuaries will want to be

assured that good practices for model development and changes have been followed. However, this note focuses instead on tasks such as what is an appropriate model to use in a particular case, what assurance is there that there are no material errors in the model results, and how is the knowledge from the model best communicated to the user.

1.4 Model Risk and Risk Rating a Model

The concept of model risk is key to using a model effectively. Because a model is a simplification of reality, there is always risk in using a model. Model risk is focused not so much on the output of the model as on the inferences, opinions, and decisions that flow from the modelling.

Various strategies would be employed to mitigate model risk. These strategies are employed when actuaries do the following:

- Choose a model for a task;
- Use the model (one-time or ongoing) or oversee its usage; and/or
- Communicate results of that model.

In determining the potential mitigation activities, the actuary would consider the level of risk that the model poses; i.e., use a risk-based approach. Model risk exposure can be considered along two scales: severity and likelihood of failure in a model.

The first is the potential severity of a model failure, or "how bad can it be?" While it is difficult to quantify this, we can provide guidance in terms of looking at the following:

- The financial significance of the results that the model produces. Severity is greater for a model that is used for a major balance sheet item than for a model that is used to decide if a particular strategy is directionally correct.
- The importance of decisions being made using this model and how much the results of this model contribute to that decision. For example, one could be using several models to make a key decision, and in this case, each model's individual contribution to the exposure is lower.
- Frequency of use. A model that is used frequently will have a much larger potential total severity than one used very infrequently because the same failure could be repeated many times until found. Conversely a model that is used infrequently is more subject to being misunderstood or misused than one that is used frequently.
- The non-financial impact. There could be a reputational impact and/or opportunity cost of getting it wrong. Even if there are no immediate financial outcomes, a model failure could lead a company to jeopardize its standing with regulators, competitors, and customers. A model failure could lead the company to miss a potential opportunity.

The second metric to consider is the likelihood of a model failure. This will generally be based on looking at the following:

- The complexity of the model. More complex models have greater potential for misuse and misunderstanding of the results, and there are many more calculations that need to be checked.
- Required level of knowledge and expertise of users. Inadequate knowledge and training of users could contribute to failures in the processing of the model, e.g., wrong inputs or failure to deal appropriately with known limitations. There could also be cases where the users misunderstand the model's purpose and try to use it for another purpose for which it has not been tested.
- Adequacy of documentation.
- Sufficiency of testing.
- The degree of independence of the one validating the model from the developer of the model.
- Adequacy of peer review.

Typically, the actuary has limited control over severity. Also typically, the actuary can exert considerable control on likelihood through matters such as choosing better models, exercising greater care in validation, and employing tighter controls for model runs. Both the severity and the likelihood of potential model errors would be considered in risk rating the model.

(This educational note assumes that a risk rating is done, but there are acceptable alternatives. The essential point is to assess the risk of the model and determine the effort expected in validating and other model related tasks. When there are many models within a firm, a risk-rating scheme promotes efficiency and consistency. When there are few models, a risk-rating scheme may not be of benefit.)

Appendix 1 presents examples of risk rating a model out of many that are acceptable. The actuary is encouraged to follow an approach to risk rating that works well in his or her business. It is important to have a consistent approach to risk rating. The amount of effort in choosing, testing, validating, documenting, and controlling a model would reflect the risk rating. All models require some work to ensure that they are being used appropriately and accurately; those with higher risk ratings require more extensive work to mitigate model risk. When the risk rating is very low, little effort is warranted; when the risk rating is high a great deal of effort is warranted. In the extreme, a model may be unacceptable because its risk-rating is too high.

A protocol for periodically updating the risk-rating would normally be part of the risk-rating approach. The following considerations may guide the decision to update a risk-rating:

- Reassess if a model fails;

- Reassess on a regular cycle, e.g., every five years;
- Reassess when model use changes; and
- Reassess if the impact of results change greater than [some tolerance level set in advance].

2 Choice of Model

2.1 New (or Substantially Changed) Model

Before using any model, an actuary would become comfortable that it is well suited to the use that the actuary intends, that the model works correctly, that available data conform to the model requirements, and that the output is in a form that the actuary can use. The actuary would be alert to limitations in the model that may prevent it from providing reliable results under certain circumstances. The model's risk rating is a key factor in determining the extent of the effort performed in deciding whether a model is acceptable. In particular, what is described below in this subsection is not to be taken as the minimum standard for all models. The amount of effort in each area would vary according to the risk rating.

Review Specification

The actuary will want to understand the model specification to verify that the methods used are sound, that assumptions that are embedded are appropriate, that the data can be provided in the form required, and that the model design contemplates all the necessary assumptions. For example, if valuing pension plans, the model needs to allow for a variety of forms of benefit, both immediate and deferred, and support the desired valuation method. The model would need a facility for adjusting the base mortality table, and it is desirable to support a two-dimensional improvement scale.

If using a third-party model, the actuary may have no access to the full specification. In this case the actuary will want to perform the appropriate tests to assess any important aspects not covered in the user's documentation.

It is important to ensure that the format and interpretation of data available to use with the model coincides with or can be made to coincide with what is contemplated in the model specification. For example, some systems use sex codes 1=male and 2=female, but others use 1=female and 2=male. Some interest rates may be assumed to be effective annual, but others may be semi-annual compound.

Validate Implementation

The actuary cannot simply assume that the model correctly implements the specification. The actuary tests the model and ideally compares it with other tested models to verify the calculations. The greater the financial significance of the work for which the model is to be used, the more thorough the testing. It is good practice to keep documentation on the testing done. It is also good practice to maintain a set of test cases that can be run through the model or a new version of the model to verify that the

model is still correct. For a model with a higher risk-rating, it may be wise to run an entire live file through successive versions of the model.

There are many techniques that can be used in validation; not all techniques are appropriate to all models. Sensitivity is discussed at greater length in subsection 2.5. Backtesting may be helpful in some cases. Comparison to other models is useful when feasible.

The actuary would ensure that an adequate review was conducted on the model code and parameters used in the implementation. In many cases the actuary will have no access to the code, but the actuary can often ask the developer to describe what review was done to ensure that the code and hard-coded parameters are correct.

An actuary who is validating a model may consider having another actuary peer review his or her work.

Dealing with Limitations

Understanding limitations of models is important but rarely easy.

Actuaries would be aware of which events are independent of each other and which are correlated. For example, the mortality of individuals is normally independent, but lapse rates may be correlated to interest rates.

Actuaries would be alert to assumptions that are fixed or embedded in a model. For example if the income tax rate is hard-coded, the model cannot be used to assess sensitivity to changes in the tax laws.

Some approximations are not robust over a full range of potential outcomes. For example, if a mortality improvement scale which is two-dimensional is approximated by a one-dimensional improvement scale, the approximation may not be good enough for a pension plan of mostly young lives with long deferral periods, but it may be fine if most of the liability is for retired lives.

The actuary would understand the range of potential circumstances and uses for which the model was designed and tested. The model may appear to work correctly for all test cases, but it may not handle the full range of situations in the real world. A model may be appropriate for pricing, but it may not be able to handle all cases needed in valuation.

Documentation[1] of Model Choice

It is good practice for the actuary to keep documentation on why he or she decided a particular model to be suitable, how it was determined to be sufficiently accurate, and what limitations, if any, were found.

[1] *Documentation* refers to the actuary's working papers and is distinct from internal or external user reports. Although documentation may not be made generally available, it is important that the documentation be available to those reviewing an actuary's work and to those who later assume responsibility for the actuary's work.

2.2 An Existing Model Used in a New Way

This subsection assumes that the steps in subsection 2.1 were previously followed for the model.

In this case, the actuary can be confident that the calculations are accurate, but the new application may be affected by limitations in the model that were not relevant in the initial application. Therefore, the actuary would consider what limitation, if any, is to be reviewed, perform appropriate testing, and document this work. The actuary would also consider whether the risk rating for the model has changed and, if it is higher, more validation work may be required. Completing this work effectively expands the range of standard applications for the model.

2.3 Models Approved for Use by Others

It commonly happens, particularly within a large firm, that one team validates a model that is to be used by others. It is generally appropriate for an actuary using a model to use the work of the others who validated the model, provided that the actuary agrees that the validation process was adequate.

The team doing the validation will typically disclose, at least in summary, that the steps in section 2.1 were followed. The actuary using the model would review the report on validation and retain evidence to show that the actuary is aware of the work done and is satisfied that the work was sufficient.

In some cases, an actuary may choose to rely on the validation done by others outside his or her firm. Unless the actuary has access to the documentation of the validation, the burden of proof for accepting such a validation would be higher than for a validation done within the firm.

2.4 Models Outside an Actuary's Area of Expertise

Actuaries may need to use and/or rely on models outside of their expertise: for example, credit-scoring models, economic capital models, or enterprise risk management models that contain features and components outside the expertise of the actuaries using the models.

In these circumstances, the actuary would determine the appropriate level of reliance on other experts. In doing so, the actuary would consider the following:

- If the individuals on whom the actuary is relying are considered experts in their field of practice;
- The extent to which the model has been reviewed by experts in the applicable field; and
- The risk rating associated with the model.

The actuary would make a reasonable attempt to understand the following:

- The basic workings of the model including its inputs, outputs, and general approach;
- The testing and validation work that was completed; and
- The model's complexity and the control framework used.

Further, the actuary would disclose, in the appropriate documentation and disclosures, any reliance on models created by other experts.

In cases where an actuary is required to use a model built using software in which he or she is not expert, the actuary would attempt to gain such understanding as to be convinced that the validation and control framework followed is sufficient to provide confidence in the results produced by the model.

2.5 Sensitivity Testing

Sensitivity testing is useful for validating a model, for understanding relationships between inputs and outputs, and for developing a sense of comfort with a model.

The actuary would consider the assumptions that will be input into the model. The actuary would test and observe the impact of varying these assumptions in validating the model.

The actuary would also consider testing a range of assumptions that may be outside the expected or currently observable range. The actuary can then observe if the model continues to operate soundly under these "what if"-type conditions. A simple example might be using zero or negative interest rates and ensuring the model result is theoretically correct.

The actuary would also ensure that the interplay between related assumptions is considered. For example, in a life insurance valuation model, a change to death rates impacts the mortality charge but also impacts the persistency of the block and may therefore have second-order impacts on the actuarial present value of the maintenance expense cash flows. The actuary would consider sensitivity testing assumptions singly and then in combination to ensure that the model works correctly and that he or she understands these interactions.

The actuary would be alert in the sensitivity testing to cases for which the relationship between input and output is non-linear or linear only over a limited range. In either case, the actuary would test a wider range of inputs so that the impact on output is more thoroughly understood.

Sensitivity testing is sometimes used to enhance the results produced by the actuary. In that case, the actuary may consider not only reporting on the chosen assumption but also on the sensitivity around that assumption. Aggregate risk models sometimes require dependency assumptions to model how different types of risk interact. The actuary usually would have to employ judgment in the choice of assumption to reflect dependency. Thus the actuary may produce results under one correlation matrix but disclose what happens under alternative correlation matrices.

The range of values tested would reflect the range of assumptions that is reasonably expected to be found in practice. Particularly in the case of stochastic models, it is important to test a range wide enough to cover the cases that would be generated randomly.

2.6 Preparing to Use the Model

Having chosen which model to use, the actuary will typically follow a set of steps before it can be used.

The model may require some customizing to fit the particular situation. Any changes to the specifications would be recorded, and any changes to the implementation would be tested.

Particularly in the case of a model that is used repeatedly and with a high-risk severity, it is good practice to document the process to be followed. Subsection 1540 provides relevant guidance on the control process. A process document might include the following:

1. Instructions for obtaining input data;
2. What authorization is required for setting input assumptions;
3. Step-by-step instructions on how to run the model;
4. Checks to be applied to model inputs and outputs;
5. Reconciliations required from prior runs; and
6. A flowchart of the process.

3 Minor Changes to a Model

When a model is changed, either section 2 or this section will apply. It is a matter of actuarial judgment which is more appropriate. If in doubt, it may be better to apply section 2.

Models are rarely static over time. A model may be changed to fix a bug, to change a hard-coded parameter, to handle a new situation, to reflect regulatory changes, etc.

Each time that a model is changed there is risk that the new feature will be implemented incorrectly, that something not planned to be changed will stop working correctly, that the documentation will be rendered inconsistent with the model, or that the change will not be correctly communicated to those who use the model.

At a minimum the actuary using a model that has been changed would be wise to run test cases through both the original and the changed model to verify that the differences, if any, are reasonable. If the changed model can handle cases not handled before, it may be useful to compare a new case handled by the changed model with a similar case handled by the previous version of the model.

The actuary may choose to rely on work done by others in validating a changed model in a manner similar to that described in section 2.3.

4 Use of Models

It is typical for an actuary to use the same model for a variety of cases, whether for valuation, pricing, or other purpose. Doing so makes good use of the actuary's time and is economical for the client. To use the terms in the standard, the actuary produces many model runs (possibly varying data input and assumptions) with the same model specification and model implementation.

4.1 Validation of Data Input

Data need to be "sufficient and reliable". It is assumed that there is a proper control process in place for obtaining the data to be used by the model. Subsection 1530 is directly relevant for data used in a model. The presence of faults in the input data represents a limitation in the model which may need to be disclosed. If the actuary does not assume responsibility for the data, then he or she would so report. Model risk increases when there are flaws in the data and may increase when the actuary assumes no responsibility for the data.

For example, if an insurance company is obtaining input to a valuation model for a material line of business, the actuary might consider the following:

Sufficiency

1. Do the data meet the requirements of the model specification?
2. If the model will be used repeatedly, are the data in a consistent format every time?

Reliability

1. Reconciliation to other sources (preferably audited):
    - For example, does an asset file reconcile to the balance sheet?
    - For example, do the total benefit/premium/records, etc., reconcile to data in other financial records of the company?
2. Summarize and compare input data to prior periods, if applicable.
3. Check and investigate data points that are outliers for possible errors. Examples are age 115, zero benefit, zero premium.
4. How are missing data handled? Is a data assumption made or is an error generated? Is it flagged?
5. Data assumptions would be reviewed periodically to assess their appropriateness.
6. Is the size of the data file consistent with prior periods?

4.2 Validation of Assumptions

In some cases, assumptions are not set through the model specification process but vary with each model run. In these cases, the input assumptions need to be as well controlled as the input data. Section 1700 is relevant for the assumptions required for a model run. The following considerations may be useful:

- Regular peer review (internal and external) of the assumptions.
- Are the intended assumptions the ones used in the model? Care should be taken with models used repeatedly that the assumptions are updated as needed on each model run.
- Are model assumptions unchanged unless they were meant to be changed?

4.3 Validation of Results

At a minimum, the actuary would ensure that the results of a model run are reasonable in light of the input. For models with higher risk rating, there would be stronger controls on the output. For many models, the following checks may be applied:

- Are outputs consistent with inputs? For example, do the output totals agree with the totals of input for number of lives or policies and the amount of insurance or income?
- How many errors were generated and what amount was involved? Is it within an established tolerance? Has the root cause of errors been identified and rectified to an acceptable tolerance?
- Are results as expected, both in direction and magnitude?
- If there are several model runs at different dates, are the latest results consistent with the trend?
- Are the results consistent with the impacts obtained from any sensitivity analysis that was conducted?
- Attribution analysis—has the change in the results from the prior period been explained?
- Testing the predictive value of the model using test data separately from data used for the parameterization.

4.4 Documentation

It is good practice for the actuary to retain documentation on the version of the model used and the inputs and outputs of the model. The model would not normally be mentioned in the user report. The actuary would not need to repeat in the documentation for a model run the issues dealt with when choosing that model.

4.5 Periodic Validation

It is good practice for the actuary to repeat the validation of a model periodically even if it has not been changed. (If the model has changed, see section 2 or 3.) A model with a higher risk-rating would be validated more frequently. A periodic validation can identify where assumptions or approximations, validated initially, are no longer appropriate and relevant in the current environment. An actuary new to a role in which an existing model has been routinely used would be wise to review the model and review the documentation of the model from the actuary's predecessor.

4.6 Stochastic Models

In many respects, a stochastic model is the product of performing numerous runs of a deterministic model. As such, the recommendations of the other subsections of section 4 would generally continue to be followed. However, as indicated by 1540.09, when a stochastic model is used, additional consideration would be given to certain other elements.

When the model inputs and/or assumptions vary with each run, the actuary would ensure that the distribution of such inputs and/or assumptions is reasonable (e.g., in a model that forecasts pension valuations, is the distribution of valuation discount rates reasonable), paying particular attention to items such as the trend, mean, median, symmetry, skewness, and tails of such distributions. The actuary would also ensure that the correlation between each of the inputs and/or assumptions is appropriate. For example, in a model that forecasts pension valuations, is the correlation between valuation discount rates and government long bond yields appropriate? In an economic capital model, is the correlation between the unemployment rate and the gross national product appropriate?

Another question that could be addressed is the potential change of the correlation between variables at the mean as compared to the tail ends of the respective distributions. For example, for property and casualty (P&C) exposures, P&C lines of business are usually considered to be moderately correlated at the mean. However, in catastrophic and infrequent situations, the dependency assumption between casualty and property lines of business increases significantly.

In validating the results of a stochastic model, it is impractical and infeasible to review the results from every simulation. Instead, the actuary might typically review the following:

- The results from a carefully chosen sample of realized deterministic scenarios, covering an appropriate range of inputs and/or assumptions (e.g., a median-type scenario, a high-inflation-type scenario, a low-inflation-type scenario, etc.).
- The distribution of output results for reasonability, again paying particular attention to items such as the trend, mean, median, symmetry, skewness, and

tails of such distributions (e.g., in a model that forecasts pension valuations, is the distribution of forecasted funded status reasonable).

- Whether the results of the chosen deterministic scenarios are consistent with the distribution of stochastic results (e.g., are the results of the median-type deterministic scenario consistent with the median of the distribution of stochastic results).
- The relationships, or distributions of relationships, between certain inputs, assumptions and/or output results to ensure they are appropriate and internally consistent (e.g., in a model that forecasts pension valuations, is the distribution of the relationship between discount rates and funded status appropriate).
- Scenarios that lie near a boundary that is particularly important to the application; for example, a calculation of CTE99[2] would be more concerned with scenarios in the far tail.

The actuary would be mindful that the result of a stochastic model is usually itself a statistical estimate that has its own mean and variance. The variance can be lessened by running more scenarios, but it cannot be eliminated. For example, if the purpose of the model is to estimate CTE99, two successive runs (with different random seeds) will usually give different results due to random fluctuation. Neither is the true answer; both estimates are equally valid. The fact that there is no single right answer presents challenges in communicating the results.

5 Reporting

The actuary is referred to section 1800 of the Standards of Practice for general guidance on user reports, both internal and external. The nature of the engagement (or assignment) will determine whether the model is mentioned in an actuary's user report. In most cases, an actuary is engaged to express a professional opinion, such as an actuarial liability associated with a pension plan or the price for an insurance product. The actuary may use a model to inform the opinion, but it is not relevant to the user how the opinion was formed as long as it was done in accordance with accepted actuarial practice (i.e., modelling is incidental to the engagement). In other cases, an actuary is engaged to model a particular situation or to assess a model (i.e., the engagement involves modelling), and in those cases explicit comments on the model and its results would be relevant to the user.

[2] Conditional Tail Expectation at 99 percent probability. That is, the mean of all scenarios that represent the worst 1 percent of results.

5.1 When Modelling is Incidental to the Engagement

The actuary would not normally mention the model unless there are limitations that need to be disclosed. The purpose of the model is to inform the actuary, who informs the user. The model is not intended to inform the user directly.

In cases where the model is not communicated to the user, one might say that the actuary bears the entire model risk.

5.2 When the Engagement Involves Modelling

In this case, the actuary would typically refer directly to the model. Whether the model is primary or secondary in the report would depend on whether the engagement was to model or assess a model or to form an opinion supported by modelling. As appropriate, the actuary's disclosure could range from describing the model and its results in considerable detail to comprising only a brief overview. The actuary may explain why the model was considered appropriate, but the work done in validation would not likely be mentioned. The actuary may have completed hundreds of model runs, but only those most relevant to the engagement would be mentioned in the report.

The actuary would disclose any relevant limitations in the model.

If model results are miscommunicated or misunderstood, it could lead to poor decision-making or other adverse consequences. Therefore, it is important to have clear and audience-specific communication of the intended use of the model, any limitations, and key approximations.

5.3 Limitations

In some cases the model may have limitations that bear directly on the ability of the actuary to fulfil the engagement. In such cases, regardless of the terms of the engagement, the actuary would disclose that a model was used and that the limitations of the model could materially impact the results. For example, if the actuary had any concerns with the quality of the data used in the model, the actuary would disclose those concerns, or if the model ignores or simplifies the treatment of a factor that the actuary considers relevant, the actuary would disclose that fact.

6 Hypothetical Examples

The following examples are not real but represent some typical situations that actuaries face. They are constructed by actuaries who have been in a similar situation and have given consideration to what would represent good practice in using a model. As with any example, these cannot be taken as prescriptive. Rather, they are intended to give actuaries a framework for addressing their own situations.

6.1 Life Insurance Valuation Using AXIS

Amy Anders has worked on the quarterly valuation of a block of non-par term insurance policies for the last two years. The company has just updated to a new version of AXIS.

The company has standard change management practices in place. Amy's work related to the valuation model involves the following steps:

1. The model risk-rating is moderately high for several reasons: the potential impact on the company's financial statements, amount of user customization in the model, and the level of expertise required to understand the model.
2. There have been control practices in place within the operating unit, in terms of change management practices, layers of documentation, and model review.
3. Her work with the new version of AXIS is therefore to do the following:
    a. Review the list of changes since the earlier version and establish an expectation of impact on the model. Identify if there is a need to isolate the impact on particular blocks of policies beyond some standard breakdowns.
    b. Convert the model and understand the impact on key outputs from the valuation. She decides to use the prior quarter-end data set per her company's change management protocol. She reruns the batches from beginning to end and reviews the impact by plan, term structure, as well as a few other key product features. She notes that the overall impact was immaterial, but the impact was concentrated to a small plan that was newly introduced last year.
    c. This was consistent with her expectation, as there was a bug fix in the new version related to certain commission tables.
    d. She documents the changes in the company's model version control system and puts comments in the data set notepad.
    e. She shares her documentation with teams who might use the model for dynamic capital adequacy testing (DCAT), Canadian asset liability method (CALM), economic capital, and other items in the future. She also shares the information with the pricing team.

6.2 Pension Valuation Using Third-Party Software

Paul Penny is a pension practitioner doing a regular valuation for a pension plan using his firm's valuation software that is licensed from a third party. Paul has been with his firm for 10 years and did the previous valuation of this plan using the same third-party software, although it was using a prior release. Paul understands that the software was thoroughly vetted by an internal team of actuaries when it was initially licensed by his firm and that this team also vets subsequent releases, but this will be the first time he will personally be using the current release. Paul's work related to the valuation model (distinct from doing the valuation itself) involves the following steps:

1. Paul considers whether the third-party software is the appropriate model for performing the valuation, and determines that it is.

2. Paul assesses the risk rating of the choice of model and comes to the conclusion that it is high, owing to the financial significance of the results to the users, the regulatory nature of the valuation filing, and overall reputational risk associated with the work.
3. Paul reviews the documentation provided by the third party to assess the extent of the changes between the release Paul used for the previous valuation and the current release. He pays particular attention to changes that could be applicable to the plan he is working on. Based on this assessment, Paul considers whether the principles of section 2 or section 3 would be most applicable.
4. In Paul's opinion, the principles of section 3 are most applicable in this case. He is also of the opinion that this release revision represents a moderately-low risk activity.
5. Paul contacts his firm's internal team that is responsible for licensing and vetting the software. They provide Paul with the quality control report from the third party, and he satisfies himself that appropriate regression testing was applied to the current release (and intermediate releases) and that the third party has rigorous controls for approving each release. The internal team also directs Paul to a source for internal working papers that indicates that they have reviewed the third-party's reports and performed their own independent testing on a control group of plans.
6. Based on step 5, Paul is comfortable that the validation process for this release was adequate.
7. Paul retains a copy of the documentation noted in step 5 and evidence of his review in his working papers.
8. Paul proceeds with the valuation of the pension plan using the new release.

6.3 P&C Valuation Using the Chain Ladder Method

Claude Cousteau is valuing a block of automobile claim liabilities using the chain ladder method. His company developed software for implementing this method several years ago, and the software continues to be used without modification. Claude's work related to the model involves the following steps:

1. Considers whether the current model is applicable, and decides that no modifications are required. The model is rated medium to high owing to the importance on the financial statements.
2. Updates the incurred loss triangles to include an additional valuation period.
3. Selects the types of averages (high/low, three year, five year, others) to be used for the age-to-age estimation.
4. Determines if the data has sufficient credibility to be used on its own or if benchmarks are required to supplement to historical data.
5. Reviews the historical age-to-age factors for anomalies and extremes.

6. Smooths and/interpolates the resulting age-to-age factors as required.
7. Selects the age-to-age factor based on the results of the model.
8. Reviews the tail factor and makes a determination of the tail factor value based on a documented methodology.
9. Runs the model to calculate the loss development pattern, which will be used to project the ultimate incurred losses.
10. Prints the result of the evaluation in appendices of the report, documenting the whole valuation of the liabilities.

6.4 Determination of the Value of Lost Wages for a Suit Involving Personal Injury

Ed Evans is an actuarial evidence actuary who has been engaged to determine a present value. Ed wrote the software for the model three years ago and tested and documented it thoroughly at that time. Ed recognized the model as important to his business because it is used for a significant proportion of his work. He has repeated the validation each time there has been a major change such as a new version of operating system or a new mortality table. He has used the model for dozens of similar cases and it remains valid. Ed's current work related to the model involves the following steps:

1. Decide whether his standard model is applicable in this particular case, and determine that it is.
2. Enter the file reference for the case, the date of birth, the date of the accident, salary, and other parameters on the input screen for the program.
3. Run the model to calculate the present value.
4. Print the screen (showing input, output, and timestamp for the run) and file it.

6.5 Forecasting Capital Requirements Using a Spreadsheet Model

Ruth Rock has been assigned the task of forecasting quarterly capital requirements for a small reinsurer. In order to improve on the method used in prior years, Ruth decided to develop a new model using a spreadsheet, which will take inputs from the entity's valuation output and finance department, as well as current yield curves and investment analysis. Ruth's work related to the model involves the following steps:

1. Ascertain the risk-rating of the proposed model by considering what the model will be used for, financial significance, frequency of use, complexity, inputs, and outputs. In this case, a moderately high risk rating was assigned. Document the result.
2. Gather the inputs.
3. Confirm the inputs with other sources: e.g., capital form submitted to the regulator, income and balance sheet data, Bank of Canada website.
4. Decide on assumptions to be used regarding sensitivity of required capital to interest rate changes:

a) Sensitivity analysis; and

b) Review actual impacts from prior periods.

5. Build the model using the prior year-end as the starting point, to forecast the next quarter (which is already past, but is being used as the initial validation of the model).
6. Validate and refine the model using several prior quarters. Highlight and document any limitations.
7. Document the process for updating the model.
8. Run the model in parallel with the prior method for a few quarters, and reconcile model output to actual results. Refine the model and update documentation if necessary.
9. Revalidate the model after year-ends, updating assumptions and documentation if necessary.

6.6 Using a New Economic Scenario Generator in an Internal Capital Model

Nigel Nyambi is the actuary in charge of the implementation of a new third-party vendor economic scenario generator (ESG) model for use in the economic capital calculation for segregated fund guarantees. Nigel's project plan includes the following tasks:

1. Review the model features, limitations, controls, parameters, and outputs and document any concerns.
2. Review the scenarios produced by the vendor under various parameters to assess whether they are reasonable and meet the needs of the company; e.g., do the risk neutral scenarios produce market values that are consistent with Canadian market prices? Document the outcome of the assessment.
3. Risk rate the ESG model and document the outcome and rationale. The model is rated as high risk because of the following:
    a. There is a high variability of the segregated fund capital to different ESG scenarios;
    b. The ESG model is used for senior management and board reporting of capital;
    c. Although the reserves are currently small, this product is a key user of capital for the company; and
    d. The third-party software code is open and can be changed by a user.
4. Set up and parameterize the ESG model to produce risk-neutral and real-world scenarios with the prior quarter's assumptions and parameters. Review the results produced.

5. Have the model validated by another person/team with the requisite knowledge and experience who is not part of Nigel's reporting chain. Review the model validation report and fix any material issues.
6. Prepare for implementation, e.g., update process and controls documentation.
7. Implement model.

Appendix 1: Risk-Rating Schemes

There are many valid approaches to risk rating a model. The point is to assess how risky a model is so that the amount of work done to choose, validate, and document a model may be appropriate to the circumstances. Two are presented here as examples.

A Uni-dimensional Approach

For example, a small- to medium-sized direct life insurance company could use a table similar to the following to evaluate its valuation models.

Review each risk factor below and place the score (1 to 4) beside each risk factor. Add up the total score at the end of the table.

Risk Factor	Score (1–4)
A. Size of block valued (percent of total actuarial liability): 1. 0–2 percent 2. 3–5 percent 3. 6–10 percent 4. Greater than 10 percent	3
B. Strategic importance of block valued: 1. Closed to new business, run-off mode. 2. Minimal new business, infrequent re-pricing. 3. Moderate new business or new product line, or occasional re-pricing or product redesign. 4. Significant new business or major product line, frequent re-pricing or product redesign.	3
C. Complexity of model: 1. Simple traditional-type product, few input files, single valuation method, single scenario, infrequent assumption updates. 2. More than one product line or valuation method, more frequent assumption updates. 3. More complex products with more product features (e.g., universal life), or many valuation methods, scenario-based assumptions. 4. Stochastic-type valuation with several scenarios and assumptions, complex products (e.g., segregated funds).	2

D. Expertise of model users and/or key person risk: 1. High level of understanding by model users—understand how the model works, products being valued, expected results. More than two persons capable of running, updating, and analyzing model results. 2. Good understanding of model and products by model user(s) and/or more than two persons capable of maintaining and explaining model results. 3. Some understanding of model and products by model user(s) and/or at least two persons can maintain/explain model. 4. Limited understanding of model and products by model user(s) and/or only one person capable of running, updating, and analyzing results.	2
E. Level of documentation and review: 1. Model fully validated and documented (assumptions, process, limitations, etc.), and documentation updated as needed with appropriate peer review and sign-offs. 2. Good documentation and frequent peer review. 3. Partial documentation and occasional peer review of model. 4. No documentation, model not peer reviewed.	3
Total Score out of 20:	13

Assessment of Score:

1—5	Minimal model risk—keep current practice, little or no changes needed
6—10	Lower model risk—reduce risk factors if possible, focusing on sections D and E
11—15	Moderate model risk—reduce risk factors if possible, focusing on sections D and E, by having more frequent reviews of models, updating documentation and training additional staff if appropriate
16—20	High model risk—high focus, immediate improvements or frequent model validation needed

A Two-Dimensional Approach

A model is assessed separately for severity and likelihood of failure, and the risk-rating is determined by balancing the two aspects.

Risk-Rating for a Model					
		Severity			
		Negligible	Low	Medium	High
Likelihood	Low	Very Low	Very Low	Low	Medium
	Medium	Very Low	Low	Medium	High
	High	Low	Medium	High	Extreme

The following is an example of a worksheet to determine severity and likelihood:

General information

Model: BBB Model
Owner: Director, XYZ
Users: Senior actuarial analyst – ABC
Main Purpose: Valuation of actuarial liabilities
Other Purposes: Regulatory capital based on actuarial liabilities

Determining Severity and Likelihood

	Questions	Response	Review & Analysis	Score
Severity	What is the ratio of product line act liabilities/total act liabilities?	20%	High >10% Med 2-10% Low < 2%	High
	What is the main use?	Valuation	Directly impacts general ledger	High
	What are the other uses?	Regulatory capital	Impacts reporting to regulator	High
Likelihood	What platform or software is used?	AXIS	In use for a number of years and well understood by actuarial staff	Medium
	What is the level of expertise of the users?	There is a training program for the senior analysts. There is review by the director	Agreed	Low

	What is the quality of the documentation of the process, methodology and assumptions?	Meets internal audit and S-OX standards	Agreed	Low
	Is there any manual manipulation necessary?	Some manipulation of data for unexpected errors on the quarter-end	Agreed	Low
	Any model failures in the past three years?	None	Agreed	Low

Overall assessment: assessment is *medium* as the high severity is mitigated by the controls to reduce likelihood.

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THE CAP ON NON PECUNIARY GENERAL DAMAGES: WHERE IS IT GOING AND HOW DOES IT AFFECT LITIGATION?

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THE CAP ON NON-PECUNIARY GENERAL DAMAGES:
Where is it going and how does it affect litigation?

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INTRODUCTION

On October 19, 2006, the Supreme Court of Canada dismissed the Leave to Appeal application in *Lee v. Dawson*[1] without reasons. In doing so, the Supreme Court of Canada ended speculation that the time had come to revisit the cap on general damages.

This paper will review the cap on general damages and the key cases that have dealt with this issue over the past 30 years.

THE *TRILOGY*

The cap on non-pecuniary damages became law in Canada as a result of the 1978 trilogy of Supreme Court of Canada decisions in *Andrews v. Grand & Toy Alberta Ltd.*[2], *Teno v. Arnold*[3], and *Thornton v. Prince George School District No. 57*[4].

In *Andrews*, Mr. Justice Dickson concluded that the time had come to stabilize and bring some consistency to awards for non-pecuniary or general damages. This was viewed as necessary for the following reasons:

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[1] [2006] S.C.C.A. No. 192
[2] [1978] S.C.J. No. 6
[3] [1978] S.C.J. No. 8
[4] [1978] S.C.J. No. 7

1. The claim of a severely injured person for damages for non-pecuniary loss is virtually limitless. The fact that there is no objective yardstick for measuring such loss leaves this area open to inconsistent and widely extravagant awards.

2. Damages for non-pecuniary losses are not really "compensatory" as no money can provide true restitution. Accordingly, such damages should be viewed as simply providing additional money to make life more endurable.

3. Under the law, the plaintiff will be fully compensated for future loss of income and future care costs which are arguably more important for ensuring that the injured person is well cared for in the future.

4. Exorbitant awards for general damages can lead to an excessive social burden (i.e. unaffordable increases in insurance and social costs).

In order to bring stability to this area of the law, Mr. Justice Dickson essentially established a rough upper limit on awards for non-pecuniary loss. He did so with the following statement:

> I would adopt as the appropriate award in the case of a young adult quadriplegic like Andrews the amount of $100,000. Save in exceptional circumstances, this should be regarded as an upper limit of non-pecuniary loss in cases of this nature.[5]

There are two important observations that can be drawn from the reasons of Mr. Justice Dickson in *Andrews.*

The first observation is that a fundamental justification for imposing an upper limit on non-pecuniary losses is the underlying assumption that pecuniary losses will be fully compensated. This results in "a co-ordinated and interlocking basis for compensation."

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[5] [1978] S.C.J. No. 6 at p. 21

The second observation is the assumption that non-pecuniary claims in the most serious cases, if left unregulated, would lead to "extravagant" awards and a subsequent burden on society. On this point, Mr. Justice Dickson said the following:

> This area is open to widely extravagant claims. It is in this area that awards in the United States have soared to dramatically high levels in recent years. Statistically, it is the area where the danger of excessive burden of expense is greatest.[6]

This line of reasoning was further developed by Mr. Justice Spence in *Teno v. Arnold* as follows:

> The very real and serious social burden of these exorbitant awards has been illustrated graphically in the United States in cases concerning medical malpractice. We have a right to fear a situation where none but the wealthy could own or drive automobiles because none but the wealthy could afford to pay the enormous insurance premiums which would be required by insurers to meet such exorbitant awards.[7]

SUBSEQUENT CASES

Fenn v. City of Peterborough[8]

This case came before the Ontario Court of Appeal in 1979, a little more than a year after the *trilogy* had been handed down by the Supreme Court of Canada.

In this case, the Court of Appeal seized on the words of Mr. Justice Dickson that the cap should not be exceeded *save in exceptional circumstances*. The Court of Appeal was dealing with a grievously injured plaintiff. There was little doubt that the plaintiff's crushing and disabling injuries moved her at least the $100,000 plateau. The question before the Court was whether or not that plateau should be exceeded.

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[6] [1978] S.C.J. No. 6 at p. 19

[7] [1978] S.C.J. No. 8 at p. 28

[8] [1979] O.J. No. 4312

In that case, the Court of Appeal relied on two factors which justified an award that was somewhat higher than $100,000. Firstly, the trial took place approximately 1 ½ years after the latest of the trials in the *trilogy* cases. It was assumed that there had been an appreciable erosion in the value of money. Secondly, it appeared that the plaintiff had suffered more substantial pain than any of the plaintiffs in the *trilogy*. Accordingly, the Court of Appeal determined that the appropriate figure for general damages in the case before it was $125,000.

This decision was not appealed and accordingly, the Supreme Court of Canada was never given an opportunity to comment on the reasons and conclusions of the Ontario Court of Appeal. It remains the only appellate level decision that exceeds the cap imposed by the *trilogy*

Lindal v. Lindal

In 1981, the same issue came before the Supreme Court of Canada in *Lindal v. Lindal*[9]. The issue before the Court was narrow: Under what circumstances should a trial Judge exceed the rough upper limit of $100,000 for non-pecuniary losses established the *trilogy.*

At the trial level, the plaintiff was awarded $135,000, a figure in excess of the rough upper limit. This case was then appealed to the British Columbia Court of Appeal which allowed the appeal and reduced the amount of the award for non-pecuniary damages from $135,000 to $100,000 based on the *trilogy.*

The case was subsequently appealed to the Supreme Court of Canada and once again, Mr. Justice Dickson rendered that Court's decision. Mr. Justice Dickson repeated the rationale in support of a rough upper limit as set out in his decision in *Andrews.* Mr. Justice Dickson re-iterated the point that such damages were not meant to

[9] [1981] S.C.J. No. 108

"compensate" the injured person but rather provide additional money to make life more endurable.

Accordingly, it was not proper to compare the nature of the injuries as between various plaintiffs to determine whether or not they were more or less seriously injured than those plaintiffs in the *trilogy*. Rather, the limit of $100,000 was to be viewed as the upper limit for all such similar cases. This would provide a measure of uniformity and predictability in this difficult area.

Finally, Mr. Justice Dickson indicated that the quantum of the award itself should not be increased to reflect the impact of inflation. Rather, the specific amount of $100,000 should be increased upon proof of, or agreement as to, the effect of inflation on that amount over time.

It is from this decision that the Courts have subsequently viewed the cap as $100,000 indexed for inflation to a precise point in time, which as of December of 2006 was $311,483.

ter Neuzen v. Korn[10]

In 1995, the Supreme Court of Canada once again commented on the rough upper limit on non-pecuniary damages. In this case, the plaintiff had been infected with AIDS as a result of an artificial insemination. At trial, the jury awarded $460,000 for general damages. The Court of Appeal ordered a new trial on the basis that the award for general damages could not exceed the rough upper limit as set by the *trilogy*.

Mr. Justice Sopinka, writing for the Court, stated that the *trilogy* had imposed as a "rule of law" a legal limit for non-pecuniary damages in personal injury cases.[11] Furthermore, Mr. Justice Sopinka indicated that the appropriate approach in cases where jury verdicts

[10] [1995] S.C.J. No. 79
[11] [1995] S.C.J. No. 79 at p. 29

exceed the rough upper limit was for the Court to essentially substitute its own award for general damages at the amount of the cap.

With this decision, the rough upper limit evolved from a judicial policy directive to a "rule of law" which not only reinforced the Supreme Court of Canada's view on the rough upper limit but arguably further formalized it in law.

The Decisions in *Lee v. Dawson*

Trial Level

In *Lee v. Dawson*, a young plaintiff sustained an extremely serious brain injury as well as serious facial injuries. The jury awarded general damages of $2,000,000. After hearing arguments from counsel, the Trial Judge felt he was bound by the *trilogy* and reduced this award to $294,600 which was the indexed amount for the cap at that time. [12]

The plaintiff appealed seeking to restore the jury's verdict by arguing that the cap should not apply.

Court of Appeal

The main ground for the appeal was based on the equality provisions of Section 15 of the *Charter*. The plaintiff conceded that the *Charter* did not directly apply as this was litigation between private parties. However, the plaintiff relied upon a body of case law[13] which held that the common law must conform to "charter values" and the cap essentially offended such "charter values". It was also noted that the *trilogy* predated the *Charter* and had never been subject to a *Charter* analysis.

In making this argument, the plaintiff essentially stated that the cap discriminated against seriously injured victims of negligence. In that regard, less seriously injured

[12] [2003] B.C.J. No. 1532 at p. 3
[13] See *Hill v. Church of Scientology* [1995] 2 S.C.R. 1130 at paragraph 95

victims of negligence were entitled to full compensation for pain and suffering. However, full compensation was denied to the most seriously injured victims of negligence as a result of the cap.

The plaintiffs also argued that seriously injured victims of negligence were also discriminated against when compared to seriously injured victims of other torts, for example, defamation where the cap on general damages did not apply. [14]

The British Columbia Court of Appeal rejected this argument based on "charter values". In doing so, they concluded that the plaintiff's argument in this regard was flawed as general damages were never meant to provide "full" compensation to injured plaintiffs. In addition, the Supreme Court of Canada had held that the amount of award for general damages should not depend upon the seriousness of the injury or how it compared to the injury of other plaintiffs as illustrated by the following passage:

> In *Lindal v. Lindal,* the Court defined the nature of non-pecuniary damage awards. The Court clearly indicated that the non-pecuniary awards are not fully dependent upon the gravity of the injury. Their purpose is not compensatory; rather, the objective is to provide a substitute for the lost amenities in an effort to improve the victim's condition and to make the plaintiff's life more bearable.[15]

In attempting to compare seriously injured plaintiffs to less seriously injured plaintiffs in order to illustrate discrimination, the plaintiffs misapprehended the essential rationale for both awarding general damages and the need for the rough upper limit, namely bringing stability and predictability to awards for general damages while at the same time avoiding excessive awards and their corresponding social costs.

In addition to this *Charter* argument, the plaintiff also made a number of additional arguments as to why the cap should not apply, including the following:

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[14] See *Hill v. Church of Scientology* [1995] S.C.J. No. 64
[15] *Lee v. Dawson* [2006] B.C.J. No. 679 at p. 16

- The Supreme Court of Canada used language in the *trilogy* suggesting that the rough upper limit was just that and not a strict rule of law.
- Considerations contemplated by the Supreme Court in the *trilogy,* such as skyrocketing awards and insurance premiums had proven to be false.
- The upper limit precluded juries from keeping up with the rapid pace of social, economic and technological change in society.
- The cap is inconsistent with modern community values, which are more accepting of disabilities than previously.
- The rough upper limit disregards juries and the importance of juries outweighs the hypothetical benefits that the guidelines might bestow.
- The establishment of the upper limit constitutes a radical change in the common law contrary to the accepted "incremental method" of achieving such changes.
- The cap produces unjust results for plaintiffs whose situations differ from the plaintiffs in the *trilogy.*
- Finally, the cap is simply arbitrary and lacking a logical foundation.

After highlighting these arguments, the Court of Appeal chose not to respond to the merits of these arguments but rather stated in a concluding paragraph the following:

> I agree with the plaintiff and the intervenor that the time may have come for the rationalization or conceptional underpinning for having a rough upper limit on non-pecuniary damages to be re-examined. However, I am not persuaded that is open to this Court to proceed on the footing that the trilogy establishing the rough upper limit is not binding on us. Some of the submissions made by the appellant and the intervenor advocating a reconsideration of the rough upper limit seem to me to be compelling but, in the end, this Court cannot overturn the trilogy.

Certainly, anyone reading this paragraph is left with the impression that the British Columbia Court of Appeal was sympathetic to the plaintiff's arguments for revisiting the rationale for the cap but simply felt that this was for the Supreme Court of Canada to decide.

Supreme Court of Canada

On October 19, 2006, the Supreme Court of Canada dismissed the plaintiff's application for Leave to Appeal. This was done without reasons. Accordingly, the rough upper limit remains the law in Canada.

Any discussion as to why the Supreme Court of Canada declined to hear the appeal in *Lee v. Dawson* is pure speculation. However, it is a probably safe to conclude that the Supreme Court continues to support the rationale for having a cap on general damages.

Perhaps the following 1981 quote from Professor Beverly McLachlin [as she then was] provides some insight in this regard:

> The concept of "full compensation" does not provide a comprehensive rationale for damages for personal injuries. It is applicable only to pecuniary losses. It provides no theoretical justification for damages for non-pecuniary losses. Full compensation in relation to non-pecuniary losses is meaningless, and arguably dangerous, since such losses by their nature cannot be fully restored.[16]

Also, for an excellent discussion on the *trilogy* and a thesis in support of the cap, it is worthwhile to review Roger Oatley's 2005 article "Is It Time To Revisit The Trilogy". Essentially, Mr. Oatley argues that the cap works because it creates an economic climate where insurers continue to underwrite property and casualty insurance. This, in turn, ensures that "innocent people recover full compensation for economic loss within an economic context that has finite resources." It also supports a stable and predictable system of law in this area which is essentially fair to most people.[17]

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[16] What Price Disability? A Perspective On The Law of Damages For Personal Injury, McLachlin [1981] Cdn. Bar Rev. Vol. 59 at p. 7.

[17] Is It Time To Revisit The Trilogy, Oatley [2005] The Law Society of Upper Canada Special Lectures 2005 (Irwin Law) at p. 174.

Cases To Which The Cap Does Not Apply

There have been cases that have awarded general damages to plaintiffs in excess of the cap.

For example, in *S.Y. v. F.G.C.*[18], the British Columbia Court of Appeal rejected the notion that the cap applied to claims for damages for sexual assaults.

In *Hill v. Church of Scientology*[19] the Supreme Court decided that there was no cap for defamation and the plaintiff was awarded $300,000 in general damages.

In *Young v. Bella*[20] heard October 20, 2005, the Supreme Court commented on the issue of the cap for non-pecuniary damage awards outside the personal injury context.

In that case, the Appellant was a university student taking courses toward her goal of being admitted to the School of Social Work and becoming a social worker. As a result of a missing footnote to her term paper, the Respondent professor speculated that the case study attached as an appendix might be a personal confession to having sexually abused children (a 'cry for help'), which gave rise to the release of this information to the child protection agency suggesting that she was a suspected child sex abuser. The information was also discussed amongst three university professors, communicated to the RCMP, social workers and her boyfriend's sister. The appellant sued the Defendant professor and University complaining that their actions 'combined to put in motion a series of events that would forever shape the course of [her] future by affecting her reputation in the community, her ability to complete her education and by reducing her income-earning capacity'.

---

[18] (1996), 78 B.C.A.C. 209:

[19] [1995] 2 S.C.R. 1130

[20] [2006] S.C.J. No. 2

A jury found the University's treatment of the appellant to be negligent and further found that as a result of this negligence her chosen career prospects had been destroyed; it awarded $839,400 in damages, including $430,000 in non-pecuniary damages. A majority of the Court of Appeal set aside the jury award.

The matter was appealed to the Supreme Court of Canada and it was argued that the cap should apply to the award for non-pecuniary damages. In rejecting this argument, the Supreme Court stated at page 17:

> The respondents have not established why the policy considerations which arise from negligence causing catastrophic personal injuries, in the context of accident and medical malpractice, should be extended to cap a jury award in a case such as the present. This argument was rejected in relation to damages for defamation in *Hill v. Church of Scientology of Toronto*, [1995] 2 S.C.R. 1130, at paras. 170-76. In our view, the case for imposing a cap in cases of negligence causing economic loss is not made out here either. As Macfarlane J.A. commented in *S.Y. v. F.G.C.* (1996), 78 B.C.A.C. 209:
>
> > There is no evidence before us that this type of case has any impact on the public purse, or that there is any crisis arising from the size and disparity of assessments. A cap is not needed to protect the general public from a serious social burden, such as enormous insurance premiums.

From these passages it is quite clear that the "social costs" issue, as a reason for the cap, remains a paramount concern of the Supreme Court of Canada.

Conclusion

The cap on general damages imposed by the *trilogy* remains a "rule of law" in Canadian jurisprudence. The Supreme Court's very recent refusal to revisit this issue in *Lee v. Dawson* likely stands as a good indication that the cap will remain with us well into the future.

Furthermore, subsequent decisions demonstrate that the original rationale for the cap, particularly the concern regarding consequential social costs, remains valid and relevant to the Supreme Court of Canada 30 years later.

PACICC

Property and Casualty Insurance Compensation Corporation
Société d'indemnisation en matière d'assurances IARD

Why insurers fail

The dynamics of property and casualty insurance insolvency in Canada

By

Suela Dibra
Darrell Leadbetter

2007

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"We are never more in danger
than when we think ourselves most secure..."

WILLIAM COWPER (1731 – 1800)

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Executive summary

The incidence and cause of insolvency varies across time and jurisdictions. However there is an international consensus that inadequate pricing and deficient loss reserves are the leading causes of property and casualty (P&C) insurer insolvency. Other factors that contribute to insurer insolvency appear to depend on the specific risk exposures that may be experienced.

The costs of insurance insolvency in Canada have been substantially lower than most countries. However, the insolvency of insurance companies has been on the rise over the past few decades. There are a number of factors behind this trend. Economic considerations include an insurance cycle that has been more volatile in recent years. Catastrophe exposures are increasing. Historically, property and casualty insurance company insolvency has occurred in waves that coincide with periods of low industry profitability.

Within this context, PACICC has conducted the first comprehensive study of the causes of insolvency in the property and casualty insurance industry in Canada. This study identifies some of the main characteristics of the 35 insolvencies that occurred during the 45 year period between 1960 and 2005.

The analysis in this paper reviews the insolvency related data to determine the relative importance of factors contributing to insurer insolvency. The main conclusions are:

- the incidence of insolvency in the 1990s was higher than that of the 1980s, which was in turn higher than preceding decades
- inadequate pricing and deficient loss reserves are the leading causes of failure for Canadian insurance companies
- the incidence of insurer insolvency varies with industry profitability and the underwriting cycle
- new insurers are more likely to fail than established insurers, and insurer survival rates for new entrants tend to stabilize after a decade of operation.

Introduction

Since the Property and Casualty Insurance Compensation Corporation (PACICC) was established in 1989, it has secured funding from members for the failure of a property and casualty (P&C) insurance company in twelve of the seventeen years of its operation. For member insurers, the likelihood of an insolvency assessment in any given year is significant. While the frequency has been high, the size of those assessments has been low, an average of 0.03 percent of industry premium, but it has been increasing at nearly three times the rate of inflation.[1]

For consumers, insurance is a key risk management strategy so it is important to minimize the disruption of an insurance company insolvency. Insurer insolvency exposes claimants and policyholders to an unexpected financial loss and may potentially be associated with considerable personal and economic cost. Further, the insurance industry is built on policyholder confidence that insurance contracts will be fulfilled and eligible claims paid. Insurer insolvency may therefore lead to reduced confidence in financial institutions. Supporting this, data from the Office of the Superintendent of Bankruptcy and the Organization for Economic Cooperation and Development show a strong negative relationship between consumer confidence and measures of business insolvency.

Fortunately, the solvency supervisory system for insurance in Canada is sound and among international jurisdictions, the Canadian risk of insurer insolvency is low to moderate. Nevertheless, while P&C insurance insolvencies are relatively rare, they do occur. PACICC was founded in 1989 with a mission to protect eligible policyholders from undue financial loss in the event that a member insurer becomes insolvent. Since it was established, PACICC has participated in the winding-up and liquidation of 12 companies doing business in Canada.

Insolvency is a term that in various contexts can have different meanings. For this report, an insolvency is an involuntary exit from the market precipitated by a winding-up order issued by the appropriate supervisory authority. Insurance companies may be wound-up when they become an insolvency risk or a liquidity risk. An insolvency risk occurs when assets become insufficient for an insurance company to meet its contractual and other financial obligations.[2] An insurer experiences a liquidity risk when it has sufficient assets to cover its obligations but there is a high level of risk that those assets could disappear. Historically all liquidity risks have been branch companies, which are run out of their foreign home office. Only OSFI may supervise branch companies. Troubled insurance companies that exited the market through mergers (so called "near misses") or run-off are not included in this analysis.[3] Throughout this paper, the term involuntary market exit is used, encompassing both insolvency and liquidity risks.

[1] The liabilities of wound-up insurers during recent years (2000 – 2005) were twice that of the liabilities of the first five years of operation (1989 – 1994). According to the Bank of Canada, inflation increased by 36.9% between 1990 and 2005.

[2] Given the complex and long term nature on many lines of business, even accurately measuring the assets or liabilities of an insurance company may be challenging. Therefore an insurance company may be deemed insolvent if the estimated assets are insufficient to meet the company's obligations with a very high level of confidence (for example 95% to 99%).

[3] An estimated 42 companies, with approximately $1 billion in liabilities, are in run-off in Canada. BarNiv and Hathorn (1997) found that distressed mergers comprised 20% to 46% of merged insurers.

A historical overview of insurer insolvency in Canada

The involuntary exit of insurance companies is not random or completely unpredictable. While some causes of involuntary exit have remained consistent, others have exhibited changing patterns over time. Improvements in solvency supervision and the winding-up of insurance companies can be achieved through better understanding of the causes of insolvency. Within this context, PACICC has conducted the first comprehensive study of the causes of involuntary market exit in the P&C insurance industry in Canada. This study identifies some of the main characteristics of the 35 involuntary market exits that occurred during the 45 year period between 1960 and 2005.

Characteristics of insolvent companies

Size	68% had less than $10 million in capital
Ownership	31% were subsidiaries or branches of a failed parent company
Type of license	two-thirds were federally supervised
Age	28% of insolvent Canadian insurers operated for less than 10 years
Growth	68 % experienced unusual growth in premiums
Underwriting	70% occurred in property and auto lines

Second last year data on capital and net premiums written were used for size and underwriting categories

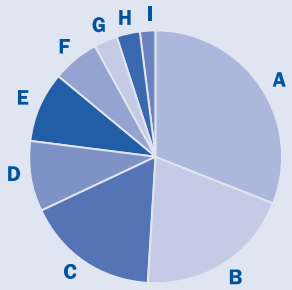
Foreign-owned insurance companies are important participants in Canada's P&C insurance market, accounting for approximately two-thirds of net premiums earned. For consumers, competition, access to foreign capital and the diversification of risk generate benefits in the form of lower prices, innovation and financially sound companies. However, it does mean that on some occasions, when a foreign parent exits the market involuntarily, the Canadian operations may also fail or in the case of branches present a liquidity risk to Canadian policyholders.

It can be important to distinguish between Canadian (whether foreign or Canadian owned) and branch companies. Canadian insurers fail as a result of their operation and exposure to the Canadian economic/underwriting environment while branch companies may fail because the home office company in a foreign jurisdiction has failed due to the economic/underwriting environment in a foreign jurisdiction.

The following exhibit presents a summary of the main (proximate) cause of involuntary exit identified for the 35 involuntary exits that occurred between 1960 and 2005.

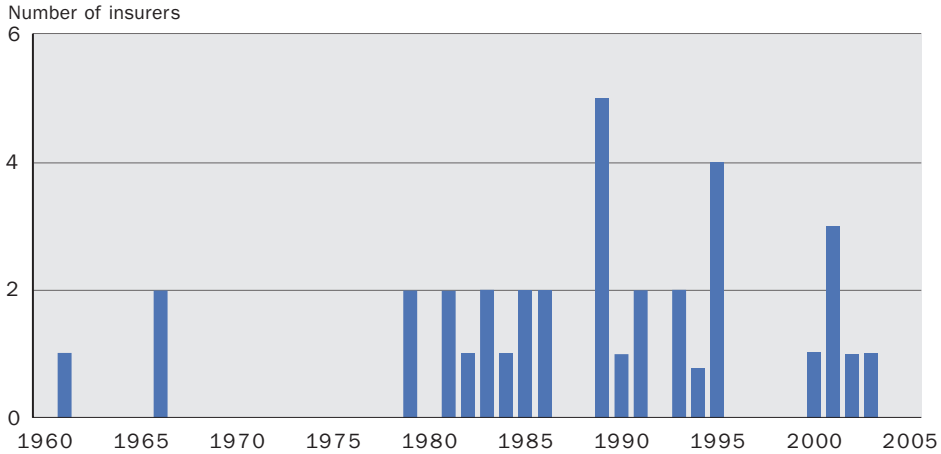
Exhibit 1 – Proximate causes of involuntary exit (1960 – 2005)

A	Inadequate pricing or deficient loss reserves (DLR)	31%
B	Foreign parent (other)	20%
C	Rapid growth	17%
D	Foreign parent (DLR)	9%
E	Alleged fraud	9%
F	Overstated assets	6%
G	Reinsurance	3%
H	Affiliate	3%
I	Catastrophe losses	3%



Since 1960 the Canadian P&C insurance industry encountered three waves of involuntary exits, which coincided with periods of poor profitability. Two waves of involuntary exit took place after 1990, with 57% of all exits since 1960 occurring in the past fifteen years. In addition, there has been a shift in the nature of involuntary exits. The number of such institutions under federal supervision has declined.

Exhibit 2 – Involuntary exits in Canada



Source: PACICC

In addition, all but one of the institutions supervised by the federal government wound-up since 1990 were liquidity risks rather than an insolvency risk, reflecting the mandate of the Office of the Superintendent of Financial Institutions (OSFI) to protect Canadian policyholders in instances where the foreign parent insurer failed. The number of company involuntary exits supervised by provincial regulators nearly doubled from four in the thirty year period before 1990 to seven in the fifteen year period after 1990.

Exhibit 2 shows the annual number of P&C involuntary exits for the 45-year period from 1960 to 2005. The first wave of involuntary exits came in the early 1980s, which coincides both with reduced profitability in the insurance industry and a recessionary period for Canadian economy. Subsequent waves of involuntary exit similarly coincided with poor profitability and a worsening insurance cycle.

Literature review

There is an extensive literature on firm survival. Generally this literature focuses on the manufacturing sectors. The theoretical frameworks provide insights for the P&C insurance industry. In addition, there is a body of insurance industry specific literature that seeks to identify risk factors for insurance company involuntary exit.

Theoretical models

Although to our knowledge there are no theoretical models specific to insurance company survival, there are two frameworks for firm survival and exit. The first framework is a dynamic equilibrium model for a competitive industry that endogenously characterizes the process for the entry and exit of individual firms. The second, a hazard model approach, estimates a firm's probability of survival based on certain firm attributes.

Dynamic equilibrium model

An example of the dynamic equilibrium model framework is that developed by Hugo A. Hopenhayn (1992)[4]. In this framework, the industry is composed of a continuum of firms which produce a homogeneous product. The firms behave competitively by taking the output price (p) and input price (w) as given. The output of a firm is a function of a productivity shock, and labour. In this context, productivity is a measure of how well a firm produces the good or service. In a manufacturing context this may be related to traditional measures of output per period of time, but may have other dimensions. In the insurance industry for example, a shock may be an innovation in underwriting techniques (positive) or an increase in the frequency of natural disasters (negative).

The firm pays a fixed cost c_f when operating in the market. To enter the market, a new firm must pay an entry cost $c_e>0$. Prior to paying this entry cost a new entrant has not yet learned its input or output prices, as these functions are not fully known prior to entry. In some regards this is analogous to an insurer which is required to meet certain capital requirements (entry cost) before becoming licensed, and who is also without a claims history will have greater uncertainty in its costs.

Model parameters

fixed operating cost	c_f
entry cost	c_e
productivity:	ψ
output prices/premium	p
input price/costs	w
product demand	N (industry) n (firm)
reservation value	xt
profit	π (ψ,p,w)
output prices	q (ψ,p,w)
input prices	n (ψ,p,w)
firm production	q = f (ψ,n)
market exit	(ψ < x)
equilibrium reservation value	x*

In this model, profits, output and inputs are functions of productivity, output prices and input prices. Let π (ψ, p, w), q (ψ, p, w), and n (ψ, p, w) be the profit, output supply, and input demand functions. The only source of uncertainty in the model is firm specific shocks. This is analogous to the industry as a whole exhibiting predictable patterns but with heterogeneity among individual firms (for example, in terms of claims costs).

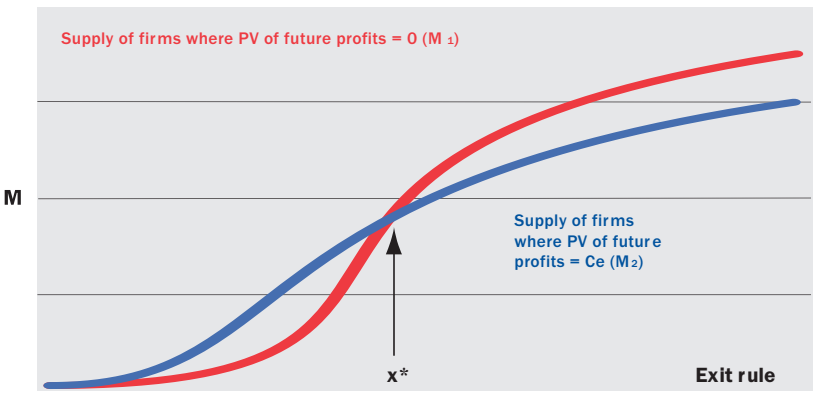
[4] Only a brief outline of the model is presented here. The model is fully outlined in Hopenhayn (1992). Variations of this model exist within the literature. Jovanovic (1982) pioneered innovative work on firm selection and survival and forms the basis from which Hopenhayn (1992) and others further developed.

Following each shock, firms and potential new entrants evaluate the environment and the value of the firm. An exit decision by a firm is determined by the firm's reservation value. This reservation value is a function of the firm's expected discounted value and represents the point where the firm is indifferent to operating or exiting the market. When a firm's productivity (ultimately affecting its value) falls below the reservation value, the firm exits the market.

New firms will enter the market until their expected discounted profits equal the cost of entry. A competitive equilibrium for the industry is attained when there are no further incentives to enter or exit the market. New firms will enter the market until expected discounted profits net of the entry cost is zero. In a competitive equilibrium setting, prices are market clearing and the exit rule is chosen optimally[5]. Figure 1 illustrates the existence of a stationary equilibrium

The model generates a number of specific predictions.[6] Of particular interest is the effect that changes in some of the parameters of the industry have on the equilbrium. Any change in these parameters would create an incentive/disincentive to enter or exit the market.

Figure 1



Source: PACICC, based on H. Hopenhayn, 1992. "Entry, Exit and frm Dynamics in Long run Equillibrium" Econometrica, Volume 60, Number 5

One implication of the model is that the rate of survival will be higher for older firms and so will average size, profits and value of firms. This implies that exit (including both voluntary/solvent and involuntary exits) rates will be lower for older firms (this is more formally outlined in the corollary of Proposition 4, Hopenhayn (1992)).

Changes in the cost of entry increases the profit that a firm must earn in order to stay in the market. In Figure 1, an increase in the cost of entry (for example due to additional regulation) shifts the M_2 curve downwards, lowering the reservation value. As a result, more firms satisfy the exit condition in the current period. Therefore the model predicts that higher costs of entry will reduce the number of firms as lower productivity firms exit the market. In subsequent periods, the industry experiences lower firm turnover, including reduced involuntary exit. Existing firms earn higher profits and are protected from new entrants by the higher entry costs.

[5] In Hopenhayn (1992), m(x, M) is an invariant measure (which is well defined, jointly continuous, decreasing in x and increasing in M) for the exit rule x and entry mass M. Then a stationary equilibrium for the industry as a whole is given by (x, M, m). For a fixed exit rule, $M_1(x)$ is the entry rule such that for $m(x, M_1(x))$, x is chosen optimally. $M_2(x)$ is the mass of entrants required for expected discounted profits of entrants to equal the cost of entry.

[6] While not considered in the discussion, the density of firms near the exit point (and also the productivity distribution of firms) will have some bearing on the magnitude of results discussed. If the density of firms around the exit point is low, there may be little meaningful impact at the industry level.

Decreasing the cost of entry, for example lowering capital requirements, has the opposite effect. More firms are able to stay in or enter the market. For consumers this means increased choice and competition. However, lower productivity firms are more vulnerable to shocks, for example, adverse development or interest rate volatility. For lower costs of entry the model predicts higher firm turnover rates as companies exit and enter the market more frequently.

The predictions of the model are more ambigous for industry-wide shocks. In general, a large negative shock, for example through increased frequency and severity of natural disasters, in the short run will result in fewer firms as the industry adapts to the new environment. However, the model has no long-run predictions for turnover or involuntary exit rates following a negative industry wide shock.

Risk-based effects were not explicitly incorporated into the original discussion of the model. However, extending the model conceptually suggests that the introduction of firm specific risk-based effects would create an environment where the cost of entry is re-established in each period and moves with the risk profile of the firm. In general this suggests low productivity firms will either operate in low risk areas of the market or exit. Participation in higher risk areas of the market would require higher levels of productivity (expertise). Overall, turnover and involuntary exit rates are reduced. In general, the model would appear to imply that risk-based approaches to insurance supervision, such as the Minimum Capital Test (MCT) and the Branch Adequacy of Assets Test (BAAT) would act to reduce the incidence of involuntary exit.

Harzard model approaches

The second framework for the study of firm survival and failure, the hazard model approach, estimates a firm's probability of survival based on certain attributes. There are a number of noteworthy findings from this literature, including the role of management and age on firm survival.

Several studies, building on research by Dunne, Roberts and Samuelson (1988) found that diversified firms survive longer and grow faster than new entrants, but also that diversifying firms with experience in related fields perform better than less experienced entrants. Examples of this literature include Mitchell (1991), Carroll et al. (1996), and Klepper and Simons (2000).

A number of studies find that a strong reservoir of support is important for firm survival. For example, Klepper and Sleeper (2001) and Walsh, Kirchhoff and Boylan (1996) find that subsidiary companies survive longer than new stand alone companies. Further Klepper and Thompson (2002) demonstrate that the quality of a subsidiary's parent company is an important factor for survival. Eisenhardt and Schoonhoven (1990) report that firm performance is increasing in the industry experience of their management. Similarly, Thompson (2005) found that new entrants learn by doing, with results improving over time and that the prior experience of management is an important factor in firm survival rates.

Generally, this research literature has consistently found that:

- pre-entry experience has large and persistent effects on firm survival
- new entrants learn by doing, with improved results over time
- firms with more experienced managers have a higher survival rate
- survival rate is increasing with respect to age.

These research findings concerning firm survival or involuntary market exit are drawn from the manufacturing industry, but offer a number of lessons for the insurance industry. The lessons from both the dynamic equilibrium and hazard model frameworks are complementary and add to our overall understanding of the dynamics of insolvency. In general, the dynamic equilibrium model framework highlights the effect that environmental factors on firm entry and exit. The hazard model framework takes a stationary equilibrium and analyzes factors that move the market to a new equilibrium.

Empirical analysis

The incidence of involuntary exit has varied across time and jurisdictions. There exists a wealth of research concerning the insolvency issue in the P&C insurance industry internationally. The majority of these studies look at both internal and external environments to determine the main causes of insolvency. One of the most recent studies concerning the sources of P&C insurance involuntary exit is the A.M. Best's insolvency report (2004). This report examines 871 insurance companies identified as being financially impaired. The primary internal causes identified from the study were deficient loss reserves and inadequate pricing (which accounted for 37% of failures) and rapid growth (which accounted for an additional 22% of financial impairments).

The second most common cause of impairment, rapid growth, occurred most frequently during soft market conditions with weak industry profits. The study found that diminished capital strength drove insurers into aggressive expansion strategies, including business/lines where underwriting experience was lacking. Other significant causes of financial impairment identified by the A.M. Best study were fraud, overstatement of assets and catastrophe losses. It appeared that alleged fraud increased up to the early 1990s and declined afterwards as supervisory authorities introduced a number of reporting and corporate governance reforms and enhanced their supervision of the industry. Of particular interest is A.M. Best's opinion that "… all primary causes of financial impairments in this study were related to some form of mismanagement" (A.M. Best Insolvency Report, 2004).

A study by Financial Services Authority (FSA) in United Kingdom analyzed recent experiences of failed insurance companies across life and non-life sectors covering fifteen countries of the European Union. The FSA analysis is based upon the Sharma (2002) report. From 270 involuntary exits a sample of 21 cases was selected covering each of the main risks identified by the group members (in total 50 generic risks were identified). The FSA utilized a methodology linking all risks an insurance company faces into causal chains. A detailed cause and effect risk map for each case study was developed. This helped identify both the relative importance of a risk and also its ultimate impact (McDonnell, 2002).

The rationale underlying the risk map is that involuntary exit is not the outcome of a single factor but rather is the result of a wide range of different and interrelated causes. The risk map is composed of two types of underlying causes – internal and external (trigger cause). Each of two main groups of causes adversely affects policyholders through the causal chains. The FSA study concluded that over 60% of the companies showed poor underwriting or reserving as a contributing factor. Second in the list is asset risk stemming from investments whose value was likely to be adversely affected by the same occurrences leading to large claims, thus exposing the firm to a 'double gearing' effect. Other causes identified were management/governance, external causes and reinsurance risk. All the case studies had significant underlying management or governance issues.

There have also been research studies concerning involuntary exits in the Asian P&C insurance markets. Involuntary exits in most Asian insurance markets are unusual, as historically insurance supervisors in those markets have sought to prevent insurance company failures. Nonetheless, a number of research studies concerning the insolvency of insurers in the Asian P&C insurance market were identified.

A study by Chen and Wong (2004) that focuses on the insurance market in Singapore, Japan, Malaysia, and Taiwan uses financial ratios to classify the insurers as financially stable and unstable. A logit model was used to detect the impact that firm specific characteristics have on insurers' financial health. The authors found that firm size (measured by the total admitted assets), investment performance, liquidity and profitability ratios were positively related to financial health, while growth of surplus was negatively related to the insurer's financial health for Singapore. On the other hand, for all four countries included in this study, the authors found a negative correlation between combined ratio and the financial health. Lee & Urrutia (1996) found similar results when they tested the explanatory power of firm-specific characteristics on the financial impairment of insurers in the United States. Findings from the Asian market study differ slightly from the A.M. Best and FSA studies. Certain factors such as premium growth appeared to have an insignificant effect on insurer financial health for the Asian market, while for the U.S. market it represented the second most important cause of involuntary exit.

All three studies noted the impact that the external environment has on an insurer's financial health. All three studies show an adverse effect of interest rates and inflation on insurance companies' performance. During rising stock markets, or inflationary periods, insurers can earn a satisfactory overall operating profit but at the same time claims costs rise faster than under-priced policies. Consistent with the A.M. Best study, Browne and Hoyt (1995) also found that unanticipated changes in inflation and interest rate levels were not significant predictors for involuntary exit in the U.S. industry.

The costs of insolvency

Involuntary insurance exits in Canada may be rare but they do occur. When an insurer becomes an insolvency or liquidity risk, policyholders face potential financial losses as they may lose their unearned premium and their claims may not be paid in full or on a timely basis.

In addition to the claims-related costs of guarantee funds, A.M. Best (2004) notes that the full costs associated with involuntary exit are difficult to measure, since in addition to claims costs and unearned premiums, they include costs incurred by the regulatory authorities, agents, accountants and reinsurers. Additional costs also include the lost wages, commissions, taxes and other expenditures of liquidated insurers.

While not the full cost, the simplest measure of the costs of involuntary exit are the insolvent insurer's claims and unearned premium payments borne by the surviving insurance companies in the industry. As the national guarantee fund, PACICC was established in 1989 to protect policyholders from undue financial loss in the event that a member insurance company exited the market involuntarily. In the event of an involuntary exit, PACICC assesses member companies for the resources required to pay loss claims and unearned premiums, up to its limits, on eligible policies. Claimants and policyholders of the insolvent insurer exchange their status as a creditor (up to the limit of their compensation from PACICC – if their claim exceeds PACICC limits, they may continue to be a creditor to the estate for the excess amounts) to the estate in return for receiving claims or unearned premium payments. This reduces the potential financial loss as policyholders and claimants receive compensation in a timely manner rather than waiting for periodic dividends issue from the estate, a process that can take more than a decade for certain claims to be settled.

PACICC has successfully funded the involuntary exit of 12 P&C insurance companies doing business in Canada, paying or setting aside resources for the payment of $150 million in respect of claims by policyholders and claimants of the insolvent insurers.

Exhibit 3 – International comparison of involuntary exit costs (2000 – 2005)

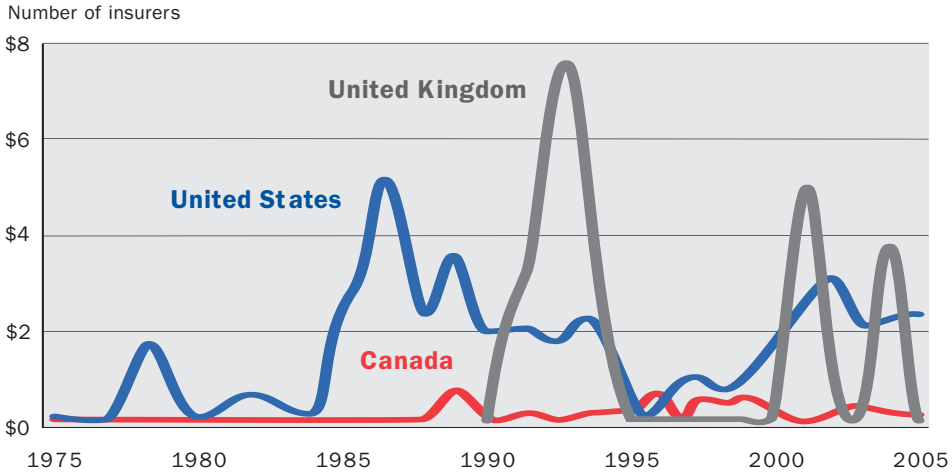
	Canada	United States	United Kingdom
Value of assessments ($ CDN)	$22,391,284*	$6,333,294,590†	$574,264,417
Number of insolvencies	6	201	4
Cost of insolvency per $1,000 net premium written	0.13	2.44	1.47
Guarantee fund	PACICC	State guarantee funds	Financial Services Compensation Scheme

* In two instances PACICC was able to secure loan agreements with the estate of an insolvent insurer that reduced the guarantee fund's assessment requirements by $53 million. PACICC's cost of insolvency per $1,000 NPW would have increased to 0.43 if these assessments had been made.

† Net assessments, which is payment costs (of $9.4 billion CDN) less recoveries from past liquidations that can be used for current failures

By comparable international standards, the costs of involuntary exit in Canada have been substantially lower than elsewhere. An important difference in paying the costs of an insolvency is the treatment of the dividends that a guarantee fund receives as a creditor of an estate. In the United States and the United Kingdom dividends from liquidated estates are used to reduce current or future assessment needs. In comparison, PACICC is required to return liquidation dividends to the solvent members of the industry. Previous assessments for prior involuntary exits are not used in Canada to pay for current or future insolvencies. As a result, the guarantee fund liquidation costs in Canada net of liquidation dividends are actually lower than the gross costs shown in Exhibit 4.

Exhibit 4 – P&C guarantee fund liqidation costs



Source: PACICC with data from NCIGF, III, FSCS, OECD

Assessments for the payment of claims have typically trended with the frequency of insolvency, generally lagging by a year. The delay in assessment is a result of two factors: the court-appointed liquidator requiring time to assess the financial status of the estate and the need for PACICC to properly identify the assessment base. Where there is broader availability of data, an assessment may occur within the first few months following a wind-up. Where data are less available it may take twelve to sixteen months to complete the assessment process.[7]

[7] To assess its member companies, PACICC currently uses publicly available data, supplemented by special requests of superintendents of insurance

External factors influencing insolvency

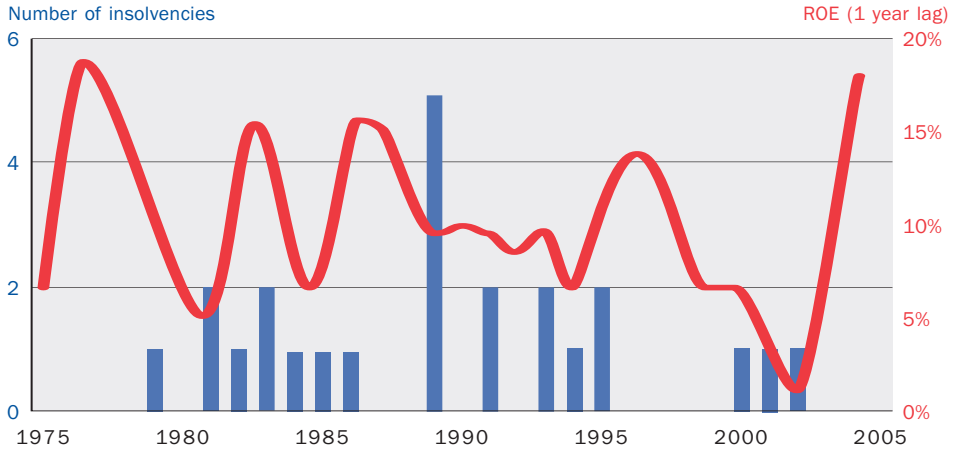
A challenging operating environment may exacerbate financial problems in an already vulnerable company – one that may otherwise have been able to survive in a more favourable environment. In particular, volatility in the operating environment, experienced through sudden, unexpected changes in economic conditions can trigger an involuntary market exit. While the external environment is unlikely to be the primary cause of involuntary exit, it may exacerbate vulnerabilities and reduce earnings and increase a company's probability of exiting.

A recent study by Cummins and Phillips (2005) found that P&C insurers are more sensitive to financial distress than all other industries. Insurers have a number of potential exposures to external shocks including the domestic underwriting cycle, increased frequency and severity of extreme weather events, general economic and financial market volatility and international developments (shocks to the reinsurance system, mobility of capital etc) as a result of the growing international nature of the industry. As a result, international insurers are becoming more sophisticated in identifying their true cost of capital and allocating it accordingly. While this has not been manifested by any failures during the recent cycle, insurers are increasingly looking at the true cost of capital when making capital allocations.[8]

Underwriting cycle and profitability

The involuntary exit of insurers is closely linked to profitability and the insurance cycle. Public confidence in insurance companies is built on the expectation that insurance contracts will be fulfilled and eligible claims paid. Capital is the foundation of this confidence, allowing insurers to absorb unexpected losses. Capital provides protection for policy-holders in the event of unexpected or catastrophic losses.

Exhibit 5 – Insurance cycle and Canadian insurer insolvency



For some companies, periods of poor profitability increase the risk of insolvency as already limited capital may be further eroded by claims development. In the United States, the A.M. Best (2004) study suggests a high correlation (60%) between the underwriting cycle and insolvency. In Canada, this correlation is not as strong, about half that of the United States. In part, this is due to the larger importance that foreign companies play in the Canadian marketplace, as nearly one-third of insolvencies in Canada have been the result of a foreign parent failing.

[8] In most cases an unprofitable subsidiary is placed into solvent run-off but in a few cases international groups have been known to let subsidiaries fail. As noted previously, an estimated 42 companies, with approximately $1 billion in liabilities, are in run-off in Canada

As Exhibit 5 illustrates, the involuntary exit of Canadian insurance companies (excluding those insolvencies that occurred as a result of a foreign parent's failure) is closely linked with the underwriting cycle and profitability. Involuntary exits increase during periods of poor profitability and decline during periods of improved profitability.

In the mid 1980s and early 1990s the P&C insurance industry experienced two waves of involuntary exits. The first wave coincided with the market softening between 1977 and 1980.

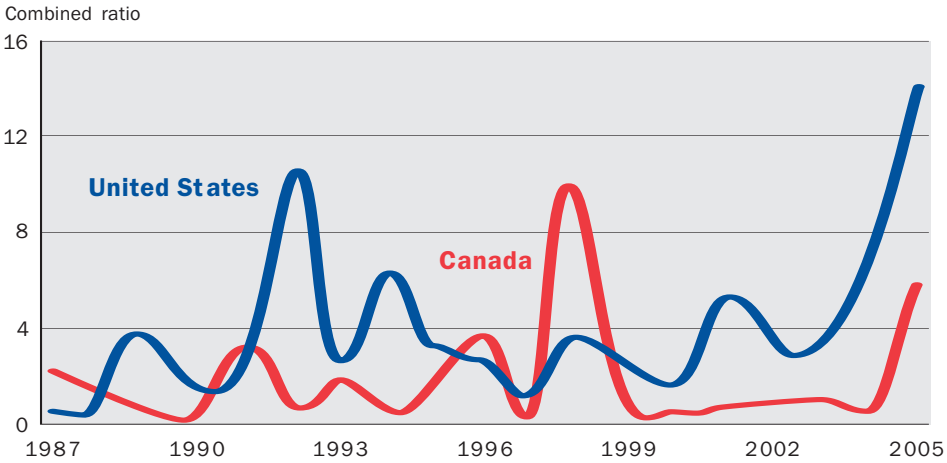
The second wave followed the beginning of the longest (1988 - 1995) soft market in Canadian insurance history. During this period, 16 companies failed – almost half of the total throughout the 45 year span between 1960 and 2005. The latest wave of involuntary exits commenced during 2000, which also coincided with a soft market and a recessionary period.

Of particular interest is the pattern of change in the Canadian insurance cycle as the length and severity – as measured by the distance from peak to trough – appears to have increased.

Catastrophe losses

Severe weather and industrial disasters are some of the key catastrophe risks that can contribute to P&C insurance solvency. Historically, catastrophe losses have had a modest impact on the financial health of insurance companies as Canadian exposure to large severe weather events such as hurricanes, is modest. During the period between 1987 and 2005, the impact of insured catastrophe losses in Canada, has been on average approximately half that of the United States. Exhibit 6 compares the impact of catastrophe losses on the industry combined ratio.[9]

Exhibit 6 – Increase in the combined ratio due to catastrophe losses



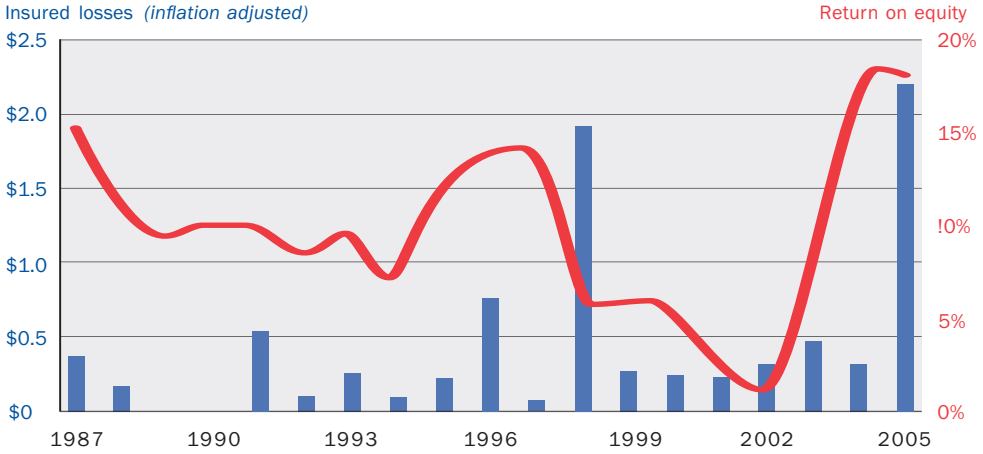
Source: PACICC with data from IBC and III

A.M. Best (2004) found that 8.2% (21 companies) of financial impairments in the United States between 1992 and 2002 were the result of a catastrophic loss. This was an increase of nearly 40% compared with the previous two decades, moving catastrophic loss from the eighth largest cause of insurer impairment to the fourth. According to A.M. Best data, during that decade, six of the ten largest U.S. catastrophes occurred (measured in inflation-adjusted terms). Hurricane Andrew (1992) alone, with associated claims costs of $29.5 billion dollars (CDN) caused 11 insurance companies to fail.

[9] Catastrophe points represent the number of points that catastrophe losses contribute to the combined ratio.

There is a moderately strong negative correlation between the financial health of the U.S. industry (as measured by return on equity) and the size of catastrophe losses between 1988 and 2004. In fact, the correlation coefficient is -33%. However, this relationship masks some significant changes that have occurred since Hurricane Andrew. The correlation coefficient between catastrophe losses and financial health was much stronger for the period 1988 to 1996 (-88%) than since 1996 (-4%). The results are similar when compared against insolvency rates.

Exhibit 7 – Canadian catastrophe loss and financial health



Source: PACICC with data from IBC

Although insured losses from natural disasters in Canada have demonstrated an upward trend during the past decade, they remain relatively low compared to total industry claims costs. Excluding the large losses of 1998 and 2005, catastrophe losses contribute only 1.2 points, on average, to the combined ratio. Data on insured losses and industry profitability (ROE) show insignificant correlation between the two (-0.03%) with one year lag. The large catastrophe losses incurred in 1998 and 2005 both fortuitously occurred in strong earnings environments, permitting the industry to absorb the losses without involuntary exit. Overall, of the 35 companies analyzed in our study, only one company (3%) exited the market due to disaster losses. Nevertheless, natural disasters have contributed to a small number of companies exiting the market through voluntary run-off.

Economic and financial market factors

In recent decades, the economic business cycle and the underwriting cycle in Canada have often overlapped. Frequently the downside of the cycles further weakened already vulnerable companies and resulted in a number of companies exiting the market in an involuntary market exits (1980, 1990, and 2000 recessions).

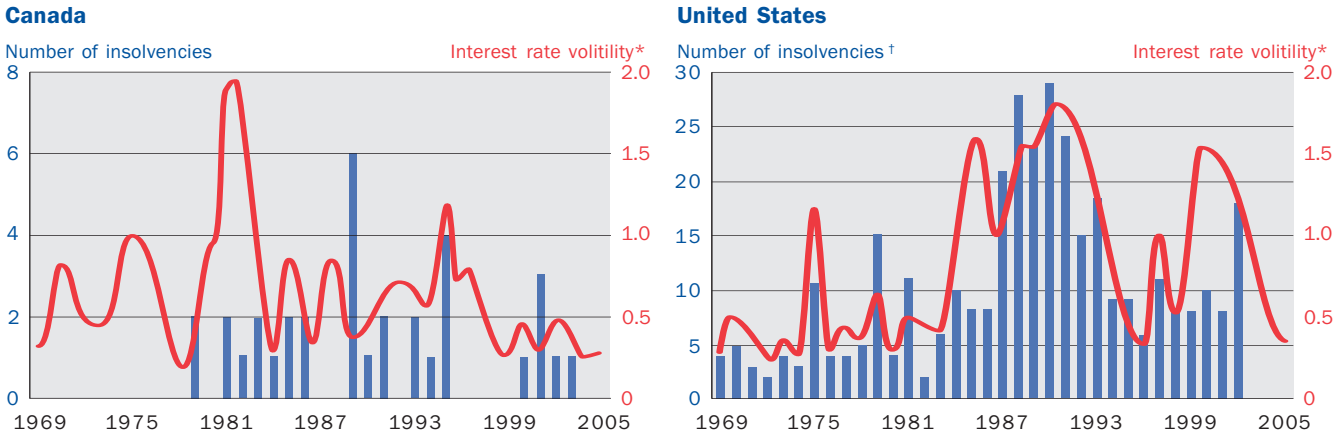
The key risk associated with economic and financial market factors is not the level of the financial variables, for example interest rates, but their volatility. Research by PACICC and A.M. Best (2004) found little correlation between interest rate levels and financial impairment. However, a volatile financial environment, even in a period of relatively low interest rate levels, increases the risk of involuntary exit for vulnerable companies. At the extremes, two rules generally hold: volatility increases risk of financial impairment; while a stable environment tends to reduce risk.

Overall, solvency risk is heightened when elevated economic volatility coincides with a softening in the underwriting cycle. This occurred in the mid 1980s and early 1990s, periods with a high level of involuntary exits in both Canada and the United States.

According to data from Statistics Canada, the P&C insurance industry experienced an underwriting loss every year during the twenty-four year period between 1978 and 2003. During this period insurance companies generally charged policyholders a premium level that was a cumulative $17 billion less than actuarially necessary to pay claims and expenses.[10] Insurance companies invested the premiums to earn sufficient investment income from the premiums to compensate for the underwriting loss. The greater the reliance on investment income for financial health, the greater exposure to economic and financial market risks.

Interest rate changes are generally gradual. Bond portfolios turn over steadily and an increase in market interest rates is usually accompanied by an increase in the book valuation rate for assets, which lowers interest rate risk. Interest rate risk is more likely to be significant where there is

Exhibit 8 – Interest rate volitility and involuntary exit



*Standard deviation of Government of Canada 3-5 year bonds and treasury yields lagged 1 year.

†Insolvencies with overstated assets and unknown cause.

Source: PACICC, with data from Statisitics Canada, A.M. Best and Federal Reserve

increased rate volatility, and historically the involuntary exit rate for insurers is at least partially correlated with volatility in interest rates. Generally underrated, interest rate risk appears to have been a contributing factor in approximately 40% of P&C insurer failures in the United States – and many in Canada.

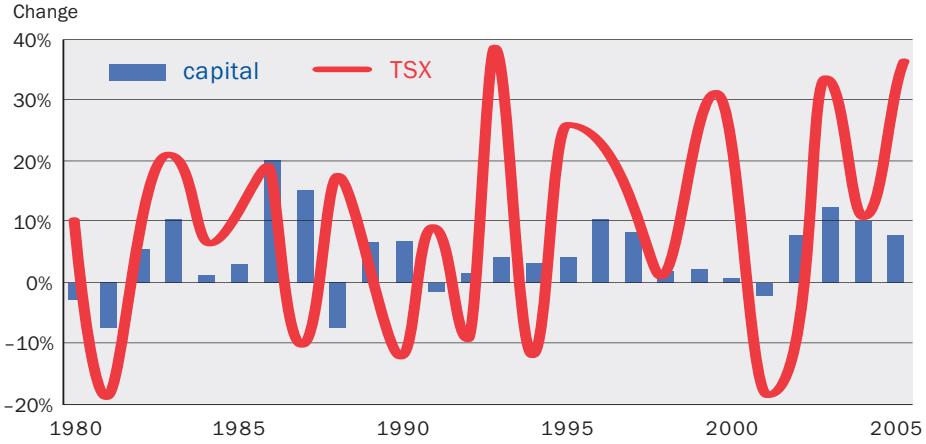
As illustrated in Exhibit 9, the aggregate impact of equity prices on insurance company capital, is limited. With the effects of inflation removed, changes in equity prices did not generate large changes in capital. The exceptions of the early 1980s may reflect a greater investment in equity markets than existed in later periods. Decreases in equity prices exhibit only a weak relationship to involuntary exit. During the failures of the 1980s, equity markets were largely doing well, with annual returns exceeding 10% during the period when the insolvencies occurred.

[10] In current dollars. In 2006 consistant dollars, the figure would be $26.4 billion.

Similarly in the mid-1990s, the peak year of involuntary exit coincided with equity prices increasing by 23.7%. While the failures of 2001 and 2002 coincided with a bear market, none of these exiting companies were significantly invested in equity markets.

A.M. Best found that the rate of financial impairment and changes in capital exhibited strong relationships with equity markets. The weaker relationship in Canada is due to the limited exposure that Canadian insurance companies have historically had to equity markets, as their portfolios have largely consisted of fixed income securities. Between 1990 and 2005 (the period for which data exist), Canadian insurance industry on average invested only 12.1% of their assets in equities.[11]

Exhibit 9 – Year-end changes in TSX and inflation-adjusted capital



Source: PACICC, with data from TSX and IBC

International exposures

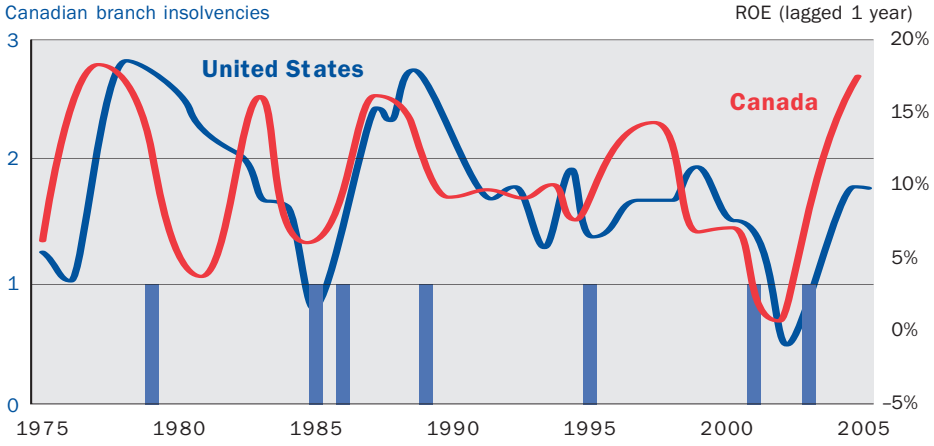
Canada's insurance market is one of the most international and dynamic in the world. Nearly two-thirds of the Canadian P&C insurance industry is foreign-owned. Overall, the international nature of the insurance industry benefits insurance consumers by increasing competition, permitting greater risk diversification, and allowing access to international sources of capital to underwrite Canadian risks.

Research is mixed on whether being foreign-owned is correlated with firm survival. Bernard and Sjöholm (2003), Esteve Pérez et al. (2004), and Alvarez and Görg (2005) – using data from Indonesian, Spanish, and Chilean manufacturing industries, respectively – found that multinationals are more likely to exit. A possible explanation of this as being related to the opportunities available to multinationals, which can relatively easily shift production from one country to another in the presence of adverse changes in one country. However, in contrast to the others, Kimura and Fujii (2003) did not find any statistically significant evidence in Japan that firms owned by foreigners are more likely to exit. While financial services such as P&C insurance are not substantively similar to manufacturing industries, 64% of insurers in run-off are foreign owned companies.

[11] In recent years, the U.S. industry's exposure to equities has been about twice that of Canadian insurers. For example, in 2005, equities comprised less than 9% of insurer assets in Canada. In the U.S., equities represented 16.3% of insurer assets. In addition, it should be noted that branch companies typically invest less in equities than Canadian companies but total investment in equities for both has been declining in recent years.

Nearly one-third of P&C insurance involuntary exits in Canada were attributable to the failure of a foreign parent. Of these, 60% were from the United States and 30% were British companies. A.M. Best (2004) did not identify foreign parent company risk as a source of failure in the United States.

Exhibit 10 – U.S. underwriting cycle and branch failure



Source: PACICC, with data from III and IBC

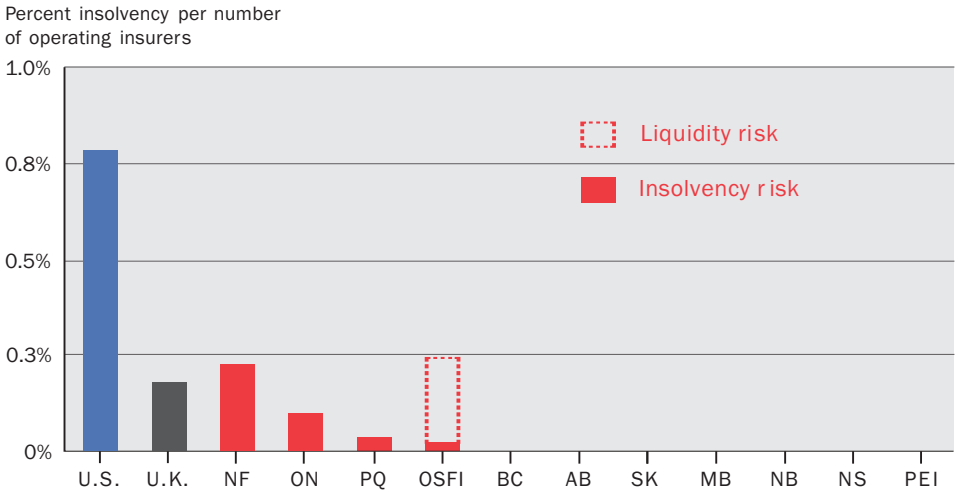
As shown in Exhibit 10, the winding-up of branch companies in Canada is closely correlated with upward trends in U.S. financial impairments (1995 is an exception).

Insolvency analysis by supervisory jurisdiction

Individual insurers are supervised for solvency purposes by the jurisdiction in which they are incorporated. Companies incorporated under the federal *Insurance Companies Act* are regulated by the Office of the Superintendent of Financial Institutions. Insurers incorporated under the various provincial insurance statutes are regulated by provincial superintendents of insurance. Currently there are approximately 158 provincially-regulated and 194 federally-regulated insurance companies writing $6.8 billion and $27.5 billion in premiums, respectively.

Provincial and federal supervisory authorities, through the Canadian Council of Insurance Regulators (CCIR), have been working to harmonize licensing and solvency standards. Appendix D compares the current minimum capital standards by supervisory jurisdiction. Comparing P&C insurer insolvency by supervisory jurisdiction through counts of involuntarily exiting companies can be misleading. A more relevant measure of comparison is frequency, which is defined as the number of involuntary exits as a proportion of the total number of insurers operating in the jurisdiction.

Exhibit 11 – P&C insolvency frequency by supervisory jurisdiction (1990 – 2005)



Source: PACICC

Frequency, on the basis of supervised institutions, shows Newfoundland to have the highest frequency of P&C insurance company insolvency in Canada. When only insolvency risks are considered (removing liquidity risks from the frequency calculation) the federal frequency falls by 88%. Since 1990, OSFI experienced only one insurer insolvency risk, but has wound-up a number of branch companies that represented liquidity risks when a foreign parent failed.[12]

The average frequency of involuntary exit (0.25%) for Canada is less than a third of that for the U.S. insurance industry and higher than the United Kingdom. However, when liquidity risks are excluded and only insolvency risks are compared, the Canadian frequency is less than one-quarter of that of the United States and similar to that of the United Kingdom.

[12] As branch companies involuntarily exit for reasons to do with their home jurisdiction rather than the Canadian market liquidity risks are represented separately by the un-shaded box.

Insolvency and company characteristics

External factors may contribute to an involuntary exit of an insurance company but they are never the exclusive cause of an involuntary exit. Effectively, every insurance company in the market (geographic or product) is exposed to catastrophes, volatility in interest rates or changes in equity prices. Therefore, the key question is, what characteristics distinguish companies that exit involuntarily from those that survive? PACICC has identified four characteristics that play a role in most insolvencies:

- governance and internal controls
- new entrants
- growth
- firm size.

In general, two or more of these characteristics can be observed in every involuntary exit reviewed.

Governance and internal controls

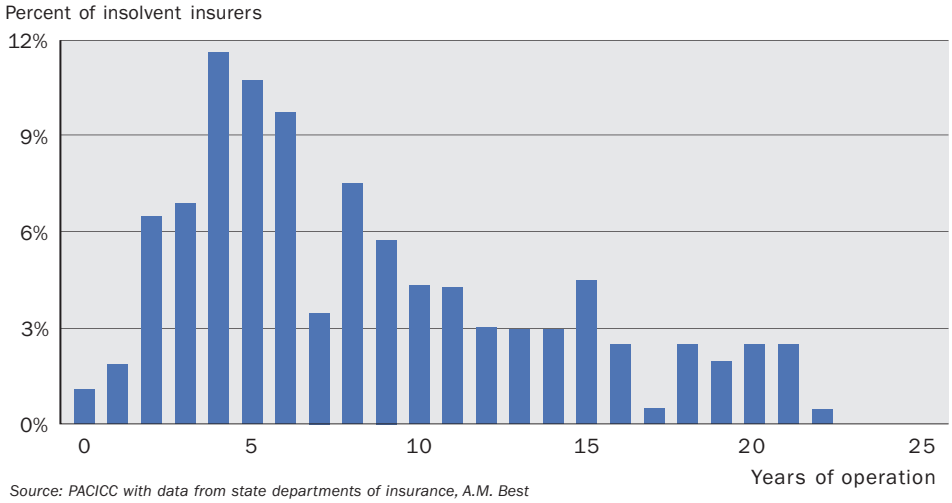
Both A.M. Best (2004) and McDonnell (2002) in their studies of U.S. and European insurance company involuntary exits found that management and governance issues appeared to lead to decisions or failed processes that caused companies to fail. Further a number of studies suggest that management styles and internal processes persist strongly over time (Nelson and Winter, 1982; Nelson, 1991; Dosi et al., 2000). Risks that are persistently poorly managed create an environment where an insurance company is more vulnerable to adverse external events. The A.M. Best (2004) and McDonnell (2002) findings are largely consistent with the firm survival research that links quality of management with firm survival. For the majority of the insolvencies in Canada (61%), the cause of involuntary exit can ultimately be traced to a strategic risk decision by management.

Internal controls and financial reporting are an important aspect for the accountability and operational efficiency of an insurance company. Internal controls and processes may break down for a number of reasons, but company solvency risk is further increased when they are purposefully circumvented. Alleged fraud was involved in three (9%) of the identified involuntary exits in the entire period covered in the study (1960-2005). It was also identified as a contributing factor to other insolvencies. Most of these failed companies were newly licensed and operating for less than three years.

New entrants

The research literature has consistently shown that the likelihood of firm survival tends to increase with the age of the firm. While the literature is largely confined to manufacturing industries, this finding holds across different sectors, time periods and even countries. The literature generally notes that new entrants face strong competition from companies already entrenched in the market and may have inexperienced management teams.

Exhibit 12 – Age distribution of insolvent insurance companies
(incorporated since 1980 – Cdn. & U.S. data)



Source: PACICC with data from state departments of insurance, A.M. Best

Nearly one-third (29.4%) of Canadian P&C insurance companies that entered the market since 1980, exited involuntarily. The average age of these failed companies at the time of insolvency was 7.9 years.

Analysis of the age distribution of 164 involuntarily-exited insurance companies incorporated since 1980 in the United States and Canada suggests that the greatest risk of insolvency for a P&C insurance company is during the first six years after start up. From the sample of involuntarily exiting insurers, 39% failed within the first five years, and 69.5% failed within the first ten years of operation.

Using data on involuntary exits and new entrants obtained from the annual reports of provincial and federal insurance Superintendents, PACICC has estimated the survival probability using the Kaplan-Meier method for P&C insurers.[13] As shown in Exhibit 13, survival probability for new entrants levels off after ten-to-fifteen years of operation.

Growth

Rapid growth, the third leading cause of involuntary exit in Canada, was involved in six (18%) of the identified involuntary exits. Rapid growth was identified as a contributing factor to exit for 23% of the failed companies. Excluding companies that exited the market as the result of the failure of a foreign parent, two-thirds of insurers exhibited rapid growth prior to exiting the market involuntarily.

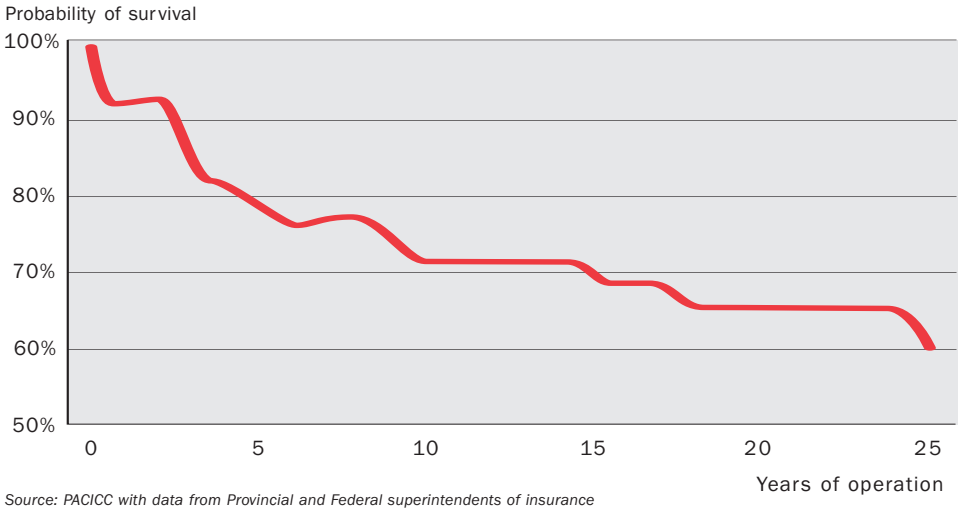
In many cases failing companies tended to grow rapidly in the last few years of business. The population of involuntarily-exiting companies, where rapid growth was not identified as either a proximate or contributing cause (~ one third of the population), grew rapidly, on average, for 1.6 years prior to being wound-up. The subgroup of companies where rapid growth was identified as either a main or a contributing factor, on average, grew rapidly for 2 years prior to being wound-up. In these periods prior to wind-up, financial ratios began to deviate from previous company and industry patterns.

[13] This is a conditional probability (the probability of being a survivor (not insolvent) at the end of the interval on condition that the insurer was a survivor at the beginning of the interval). Survival to any time point is calculated as the product of the conditional probabilities of surviving each time interval. Firms that exit in a solvent fashion are considered survivors.

For an insurance company, rapid growth is usually accompanied by deteriorating loss reserves. Rapid growth was the most frequent contributing cause (67%) for companies with deficient loss reserves as the main cause of involuntary exit. Furthermore, two-thirds of the companies with rapid growth as their main cause had deficient loss reserves contribute to involuntary exit.

The incentive to embark on long-term, aggressive expansion strategies tends to increase during periods associated with diminishing capital strength. Companies may also enter new areas of business where they lack expertise. Moreover, during periods of rising short-term interest rates, some insurers may grow rapidly in the hope that investment income from the increased premium writings will offset underwriting losses.

Exhibit 13 – New P&C insurance company survival rates (involuntary exits)



Source: PACICC with data from Provincial and Federal superintendents of insurance

Firm size

Involuntary exits in Canada have typically been small insurers writing significantly less than one percent of total industry premium. In the firm survival literature a key empirical regularity is that survival is highly dependent on firm size and age (Thompson, 2005 & Dunne et al, 1988). The literature exploring these relationships has found that age and firm size are positively correlated, suggesting that firm size is largely a proxy for age (Thompson, 2005).

Cummins and Phillips (2005) estimated the risk premium associated with P&C insurers and found evidence that larger insurers are less sensitive to financial distress than smaller insurers. This is the expected result if larger firms are also more diversified and have better access to capital. However, the impact of the size factor was much smaller than other risk factors. Further, the firm size betas estimated by the authors were smaller for P&C insurers than for firms in other industries, suggesting that the size effect is less pronounced in the P&C industry than for other industries.

While some larger and older insurers do exit the market involuntarily, the risk of exit appears to be substantially higher for newer and smaller insurance companies.

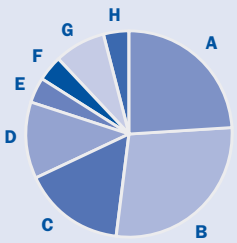
Causes of insolvency

Exhibit 14 identifies the primary or proximate causes of involuntary exit for the 34 Canadian insurance companies that were wound up between 1960 and 2005. However, there is rarely a single cause of involuntary exit. Insurance company failures are generally caused by multiple factors. The primary or proximate cause is defined as the factor that led to a winding-up order being issued. In most cases, the proximate cause was merely the final challenge following a set of other contributing causes that led to the insurer's failure.

Exhibit 14

Primary causes of P&C insolvency from 1960 to 1994

A	Foreign parent (home office)	24%
B	Inadequate pricing/deficient loss reserves	28%
C	Rapid growth	16%
D	Alleged fraud	12%
E	Reinsurance	4%
F	Affiliate	4%
G	Overstated assets	8%
H	Catistrophe losses	4%



Primary causes of P&C insolvency from 1995 to 2005

A	Foreign parent (home office)	40%
B	Inadequate pricing/deficient loss reserves	40%
C	Rapid growth	20%

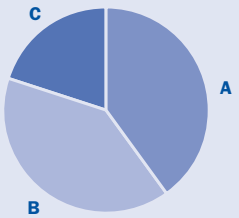


Exhibit 14 identifies the primary causes for insurer involuntary exit prior to and after 1995. The reason for segmenting at 1995 is based on significant changes in corporate governance, and the introduction of early warning tests such as MAT (Minimum Asset Test) that occurred around that time.

Prior to 1995, deficient loss reserves were identified as the leading cause of involuntary exits, accounting for nearly one-third of such exits. The failure of a foreign parent (home office) accounted for one-quarter of the involuntary exits experienced by the industry. Rapid growth and alleged fraud together accounted for another quarter of all involuntary exits. Fourth on the list of main causes pre-1995 is overstated assets, accounting for 8% of involuntary exits.

Since 1960, and similar to A.M. Best's findings, inadequate pricing and deficient loss reserves are an important cause of insurer involuntary exit in Canada. The adequate pricing of risk and reserving for future claims is the core function of an insurance company. In an analytical framework this means that the premiums collected should match expected losses. In this framework, assuming that insurers are rational decision makers in that they utilize all available information in their pricing decisions, then an insurer would set prices using data that is one period old[14]. The following function describes the pricing of insurance:

$$P_t = E(L_{t-1}) + E(II^u_t)$$

[14] When there is some uncertainty in the losses (for example losses in period t-1 are not an accurate predictor of losses today, uncertainty in the data) a stochastic error term is included in the simple model.

where $E(L_{t-1})$ is the expected loss (claims) experience, II^{u}_{t} is the expected underwriting result (profit/loss). In a competitive market, without a systemic error which introduces mis-pricing throughout the system, we would expect this function to hold.[15] Insurance premiums earned in period t are set aside as reserves to pay claims from period t (which may be fully realized in later periods such as t+1). In subsequent periods as claims become realized, if insufficient reserves were set aside, an insurer must deplete capital – the margin between solvency and insolvency – to increase reserves. A company with insufficient capital must use current revenues to support current claims and a portion of past claims. Persistent and consistent underpricing and inadequate reserving may ultimately lead to insolvency. Every insurer identified as failing due to under reserving, failed when the underwriting cycle worsened and the industry entered a period of low profitability.

When combined with rapid growth, which is often future deficient loss reserves, inadequate pricing and deficient loss reserves account for nearly half of all insolvencies prior to 1995 and more than half (55%) following 1995. A.M. Best notes that insurers that embark on aggressive expansion strategies, particularly in new lines of business, typically experience deterioration in loss reserves and diminished capital.

Reinsurance is identified as a cause of impairment when a company's reinsurer is unable to fulfill its obligations to the insurer. Although reinsurance was found to be a main cause of insolvency only for one insurer, it was a contributing factor for 26% of the involuntary exit population during the period of 1960 to 2005.

International comparison of causes of insolvency

Several studies have been undertaken to identify the primary causes of involuntary exit in different jurisdictions. Exhibit 15 summarizes key conclusions and information pertaining to these studies.

Except for the study concerning Asia, all the studies surveyed impaired P&C insurance companies. The study by Chen & Wong (Asian study) uses a logit regression analysis instead to identify the main factors that impact an insurer's financial health.

Exhibit 15 shows that inadequate pricing and deficient loss reserves are the leading cause of involuntary exit in all jurisdictions. Deficient loss reserves accounted for 54% of P&C insurance failures in the United States, 33% for Canada and 36% for EU countries. The study by Chen & Wong found that inadequate pricing and deficient loss reserves had a significant negative impact on insurer profitability.

[15] Cummins (2002) outlines a simple model for insurance pricing that demonstrates this. Note that the result does not hold when there is systemic error. Mis-pricing could occur where there is incorrect or lagged information on loss costs. Some accounting conventions, rate regulation or inappropriate estimation techniques could introduce systemic mis-pricing.

Exhibit 15

Jurisdictions	Leading causes of insolvency: First	Second	Third	Methodology	Number of companies	Source
Canada	Inadequate pricing/deficient loss reserves	Foreign parent (home office)	Rapid growth	Survey	35	PACICC (2007)
United States	Inadequate pricing/deficient loss reserves	Fraud	Significant change in business	Survey	871	A.M. Best (2004)
EU	Inadequate pricing/deficient loss reserves	Asset risk	failed systems	Survey	140	FSA (2002)
Asia*	Inadequate pricing/deficient loss reserves	Asset risk	Concentration/bus.	Regression	159	Chen & Wong (2004)

**Countries included in this study are Japan, Singapore, Malaysia and Taiwan.*

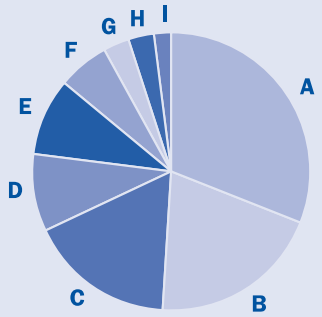
Unlike the other jurisdictions, the failure of a foreign parent (home office) was found to be one of the top three leading causes of involuntary exit in Canada. The studies of both EU and Asia identified asset risk as a leading cause of impairment. In these cases insurers were not appropriately considering the correlation between the risk profiles of their assets and liabilities. The cross national comparison highlights the importance of adequate pricing and appropriate reserving in the P&C insurance industry.

Discussion

During the period between 2000 and 2005, failures cost insurers in the United States $5.7 billion (US). A record number of Canadian insurers were also vulnerable over this period with six companies being wound-up. In a competitive property and casualty insurance industry, it is inevitable that some insurers will encounter financial difficulties and in exceptional circumstances, some will become insolvent. Insolvency is an involuntary exit of the market precipitated by a winding-up order initiated by the appropriate supervisory authority. Insurance companies may be wound-up when they become either an insolvency risk or a liquidity risk. An insolvency risk occurs when assets become insufficient for an insurance company to meet its contractual and other financial obligations. An insurer experiences liquidity risk when it has sufficient assets to cover its obligations but there is a high level of risk that those assets could disappear. Typically liquidity risks are branch companies where the home office is experiencing financial impairment.

Exhibit 1 – Proximate causes of involuntary exit in Canada (1960 – 2005)

A	Inadequate pricing or deficient loss reserves (DLR)	31%
B	Foreign parent (other)	20%
C	Rapid growth	17%
D	Foreign parent (DLR)	9%
E	Alleged fraud	9%
F	Overstated assets	6%
G	Reinsurance	3%
H	Affiliate	3%
I	Catastrophe losses	3%



Within this context, PACICC conducted the first comprehensive study of the causes of insolvency in the property and casualty insurance industry in Canada. There is rarely a single cause of involuntary exit. Insurance company failures are generally the result of multiple factors. The primary or proximate cause of exit is defined as the factor that led to a winding-up order being issued. Exhibit 1 summarizes the main (proximate) cause of involuntary exit identified for the 35 involuntary exits reviewed.

Exhibit 16 – Contributing causes of involuntary exit in Canada (1960 – 2005)*

Inadequate pricing or deficient loss reserves (DLR)	77%
Rapid growth	43%
Foreign parent/home office	32%
Reinsurance	29%
Overstated assets	15%
Alleged fraud	12%
Canadian affiliate	9%

* Percentages do not add to 100% because each case may have multiple contributing causes. Should be read as % of total involuntary exits that occurred experienced the factor.

In most cases, the proximate cause was merely the final challenge following a set of other contributing causes that led to the insurer's failure. Exhibit 16 presents a summary of the contributing causes of involuntary exit. The high level analysis presented in this report and observations drawn from risk maps of individual insolvencies offer a number of lessons and observations. These observations are outlined and grouped into relevant categories, are presented below.

Governance/management

Whether it was inexperience, underwriting mis-judgement, capital management decisions or fraud, in the end strategic choices and risk appetites were at the root of all causes of insolvency. From the Canadian experience with insolvency the following observations can be made:

- experience matters, and greater experience of senior management reduces the incidence of insolvency
- strong internal controls and financial reporting reduce insolvency risk, as 35% of involuntary exits demonstrated clear breakdowns in internal controls
- up to two years prior to the wind-up of a company, management in many cases undertook strategies that could be described as "gambling for survival".

Operational risk

In the Canadian experience, insurers that involuntarily exited often had a substantial concentration of risk. Risk concentration may occur in the form of geographic and/or product concentration. While diversification does not prevent involuntary exit, there appears to be some evidence that it does increase the survival rate of companies. Further, when expanding into new lines, sticking to related lines reduces the risk of exit. Several involuntary exits were in the process of reinventing themselves and expanding into new lines of business in which the company had limited experience.

Underwriting

At the macro level, insurer involuntary exit was found to be related to industry profitability and the underwriting cycle. As illustrated in Exhibit 5, during the period 1975 to 2005, insolvency (involuntary exits after excluding liquidity risks) occurred disproportionately in years where return on equity was less than 10%. Over the period, insolvency was 3.2 times more likely to occur when industry return on equity was below 10% than when it was higher [16].

The relationship between profitability and insolvency appears to have become more evident in Canada since 1990. Since then, insurance company insolvency has been limited to years of poor profitability. Unfortunately there is insufficient data to test whether there was a structural change in the environment as a result of the introduction of rate regulation, reforms in financial reporting, governance and capital requirements implemented since 1990, or whether the result is coincidental.[17]

[16] Historically, the number of insolvencies declines by half with an industry ROE (lagged by one year) of 12% and does not decline again until industry ROE (lagged one year) exceeds 15%.

[17] There were 10 P&C insurance insolvencies (excluding liquidity risks) in Canada after 1990 and when involuntary exits resulting from fraud, catastrophe loss or reinsurance failure are removed, the pre-1990 period looks much more like that after 1990, where insolvency was 5.6 times more likely to occur in years of poor profitability.

Among insurer-specific factors, the leading cause of involuntary exit in Canada is inadequate pricing and deficient loss reserves, accounting for 31% of the impairments. This is consistent with international experience. In addition, sudden rapid growth was evident (67%) for a majority of failed companies (even if it did not directly contribute to the involuntary exit) and was particularly prevalent for companies where deficient loss reserves were a proximate cause of involuntary exit. In general, sudden growth in unpaid claims liabilities was the primary driver of involuntary exit. In 77% of involuntary exits, the failed insurer experienced sudden growth in unpaid claims liabilities. In the majority (88.9%) of cases where asset risk (reinsurance, overstated assets) was a contributing factor, this was triggered by liability-related problems (for example, the insurer could no longer afford or was unable to get reinsurance because of its liability risk).

It should be noted that there is great diversity among companies in terms of solvency in any environment, but underwriting profitability is an important predictor of insolvency. In this context the following observations can be made:

- adequate pricing and accurate loss reserve estimation are critical for reducing the likelihood of involuntary exit
- rapid growth may be associated with under-pricing.

Capital

A number of complex theoretical models of firm performance offer insight into factors that influence entry and exit into an industry. In particular they suggest that risk-based supervision should reduce solvency risk. To date, the limited data available from the adoption of a risk-based framework for federally regulated insurers seems to support this.

Reinsurance was not a major source of insolvency but it was a contributing factor in 26% of failures. Reinsurance allows insurers to transfer risks that exceed their underwriting capacity or share risks which they choose not to bear alone. The purchase of reinsurance may reduce the volatility of insurer underwriting results, provide capital relief and provide specific expertise and services for an insurer. Acting as a risk transfer mechanism for large losses, reinsurance has been an important part of the insurance industry for nearly 160 years, contributing directly to the stability of the Canadian insurance markets.

However, reinsurance assets are risky in that they can deteriorate quickly, cannot be readily sold and must be actively managed. In the majority of cases the issue appears to have been one of reinsurance management by the failed insurer, rather than reinsurance failure. In some cases there were complex inter-group arrangements, in others there was over-reliance on reinsurance assets that became more difficult to obtain when the reinsurance market hardened.

PACICC's analysis of the Canadian insolvency experience has identified the following general observations:

- in most cases, capital deteriorated rapidly in the final year of operation
- in Canada, as contributors to insolvency risk, liability risks have historically been far more important than asset risks.

Macro-economic environment

Volatility in financial markets, specifically in interest rates, also had modest solvency implications. The interest rate volatility in the early 1980s and mid-1990s (in combination with the insurance cycle) appear to have contributed to the relatively high rates of insurer involuntary exit during those periods. Catastrophe losses were not found to be a source of involuntary exit in Canada. This result may be more fortuitous than real, as large catastrophes losses have occurred in years of strong profitability. Since catastrophe losses do not time themselves to the insurance cycle, it is possible that they may be linked to involuntary exit in the future.

Among the three waves of Canadian insurer involuntary exit, the insurance cycle and interest rate volatility were identified as catalysts for involuntary exit. The periods with the greatest frequency and severity of Canadian insurer involuntary exit involved more than one catalyst. When interest rate volatility and the insurance cycle did not coincide, the estimated frequency and severity of involuntary exit was substantially reduced.

Period of involuntary exit	Catalyst
1980 – 1985	Insurance cycle, interest rate volatility
1991 – 1995	Insurance cycle, interest rate volatility
2000 – 2002	Insurance cycle

Monitoring and Supervision

Supervisory authorities work to maintain efficient, fair, safe and stable insurance markets for the benefit and protection of policyholders. PACICC's review of the Canadian insolvency experience has identified a number of general observations relevant to solvency supervision:

- financial risk ratios generally begin to fluctuate up to two years prior to involuntary exit and winding-up (note: because financial risk ratios also fluctuate for companies that do not become insolvent, supervisors need the capacity to properly identify and monitor solvency risk).
- no single indicator, in itself, is a reliable predictor of insolvency
- start-up companies are at greater risk of insolvency
- supervisors need to have a good understanding of reinsurance arrangements
- companies writing in new lines of business, outside of their area of expertise, are at greater risk
- public data availability increases market discipline and helps identify areas of potential concern, placing pressure on companies to address problems earlier.

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Appendix A – Methodology

The risk map approach of McDonnell (2002) and the EU (2002) was used in this study. The risk map utilizes a framework that illustrates the sources of risk (failed processes, risk decisions, external factors, management) and the links between them. The process of mapping and analyzing the data allowed us to develop a broader understanding of why a particular institution was wound-up.

Financial data for ten years (where available) prior to the winding-up was used for all insurance companies in the sample. Risks and behaviour were inferred by analyzing data on premium growth, capital levels, assets and liabilities, liquidity, investment performance and reinsurance arrangements. Financial data was supplemented with qualitative data from other sources such as court documents, PACICC's own files and supervisory bulletins. In addition to firm specific risks, we performed statistical analysis on the macro-economic environment, analyzing the relationship between interest rate volatility, the underwriting cycle and catastrophe losses.

Insurance companies generally fail as the result of the interaction of a number of factors. The primary or proximate cause for the purposes of this study is defined as the factor that led to a winding-up order being issued. In most cases, the proximate cause was merely the final challenge following a set of other contributing causes that led to the insurer's failure.

Data

The main sources of the information utilized in this study was from MSA Research, Insurance T.R.A.C. Report (Canada), Canadian Insurance Statistical Issue, Canadian Underwriter Statistical Issue, General Insurance Register, OSFI's Annual Reports, PACICC, and A.M. Best. For the early impairments (prior to 1979), data lacks details and in some cases was not available. For companies showing signs of impairment after 1979 and especially after 1990 the data was available and highly detailed.

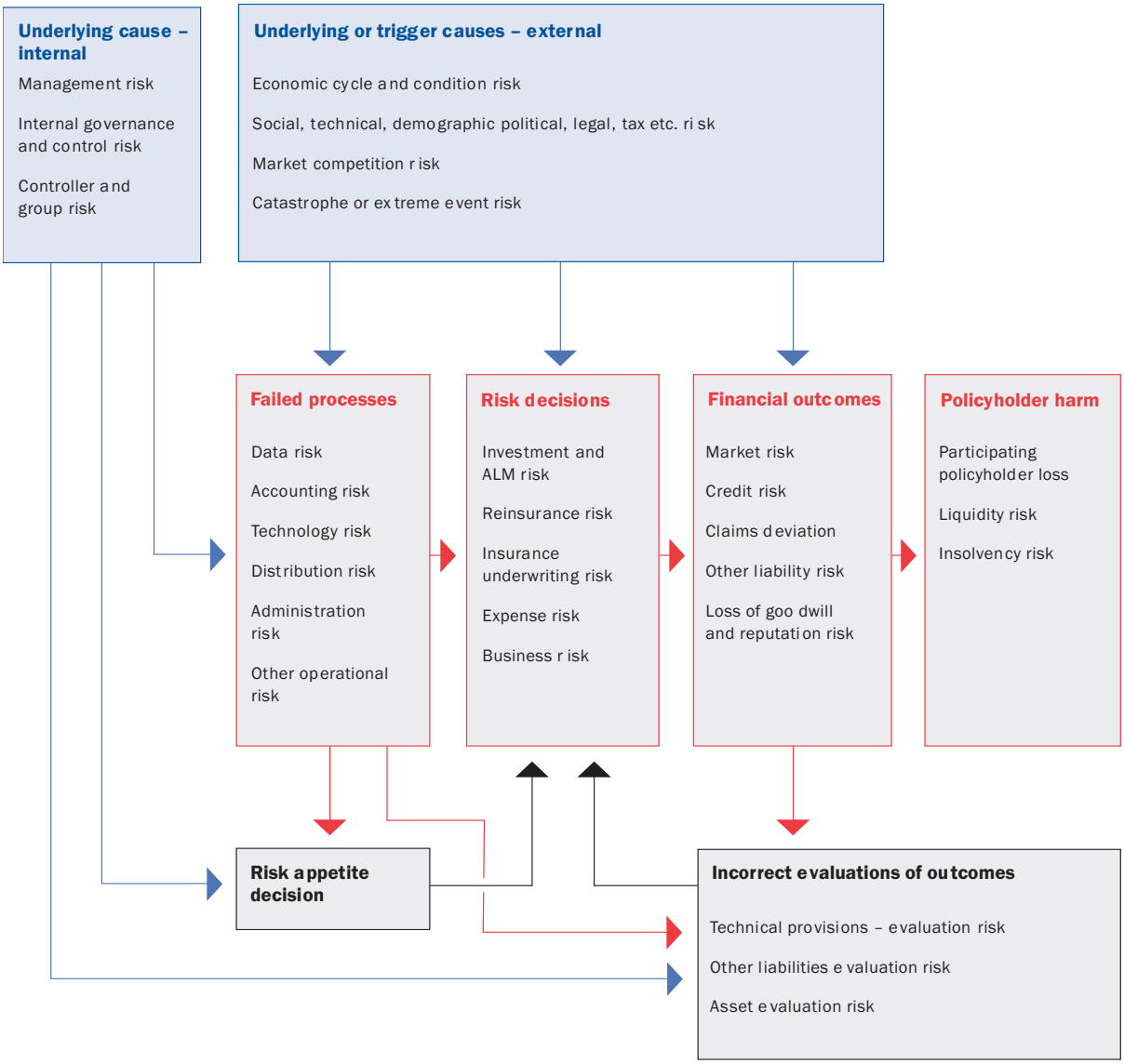
The data was supplemented with data from court documentation where it was available.
This study, which is the most comprehensive insolvency study in the industry, covers financial impairments for the entire P&C insurance industry in Canada. Since insurers voluntarily file their financial data with MSA Research (1990-2005), T.R.A.C., Canadian Insurance and Underwriter Statistical Issue, some data may not have been available. In some cases, however, the data for provincial companies were provided from provincial superintendents annual reports.

A thorough financial analysis was conducted by looking at premiums growth, capital levels, assets and liabilities, liquidity level, investment performance, reinsurance arraignments. We performed statistical analysis concerning interest rates volatility, and correlation coefficients.

For the early impairments (prior to 1979), the data lack details and in some cases were not available. For companies showing signs of impairment after 1979 and especially after 1990 the data was available and highly detailed.

It is imperative to point out that this study does not include the "near misses" which are defined as companies that would have wound up if they hadn't been merged or acquired by another insurer

Risk map



Appendix B – Definition of terms

Branch – insurance company whose jurisdiction of incorporation is another country.

Capital – residual after all liabilities are deducted from assets. This is an insurer's net worth.

Combined Ratio – It is the sum of the loss ratio, loss-adjustment expense ratio, underwriting expense ratio and dividend ratio.

Cash Flow Underwriting – An underwriting practice where coverage is provided for a premium level that is actuarially less than necessary to pay claims and expenses.

Financially Impaired Company – insurer that has had an official action taken against it by its regulator.

Failure Frequency – Number of impaired companies as a percentage of the number of companies in a particular group (i.e., jurisdiction).

Federal Company – Insurance Company holding a federal insurance license issued by the Office of Superintendent of Financial Institutions (OSFI).

Guarantee Fund – Fund utilized to pay losses to impaired companies' claimants.

Hard Market – Phase in the underwriting cycle where insurance premium rates are increasing faster than the loss costs trends.

Involuntary Exit – An insurer exits the insurance market involuntarily because of a winding up order is issued against it.

Loss Reserves – Liability established to pay anticipated claims and expenses associated with settling claims.

Near Misses – An insurance company that would have wound up if it hadn't merged or been acquired by another insurer.

Policyholders' Surplus – Residual after all liabilities are deducted from assets. This is an insurer's statutory net worth.

Premium – Amount of money paid for insurance coverage.

Premiums, Net Earned – It is the portion of premium that has been earned by the insurance company, net of reinsurance.

Provincial Company – Insurance company holding an insurance license issued by one province. Prudential regulation for this type of insurer is the responsibility of the province.

Soft Market – Phase in the underwriting cycle where insurance premiums are decreasing and a period when underwriting criteria are often more lax.

Underwriting – Risk selection for insurance and determination of the amount of premiums and what terms that insurance company will accept the risk.

Appendix C – Primary causes of insurer insolvency by year

	I	II	III	IV	V	VI	VII	VIII	
	Inadequate pricing/deficient loss reserves	Parent failure	Rapid growth	Alleged fraud	Overstated assets	Reinsurance	Catastrophe losses	Failure of a Canadian affiliate	Total
1960	0	0	0	0	0	0	0	0	0
1961	1	0	0	0	0	0	0	0	1
1962	0	0	0	0	0	0	0	0	0
1963	0	0	0	0	0	0	0	0	0
1964	0	0	0	0	0	0	0	0	0
1965	0	0	0	0	0	0	0	0	0
1966	0	0	2	0	0	0	0	0	2
1967	0	0	0	0	0	0	0	0	0
1968	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	0	0	0
1970	0	0	0	0	0	0	0	0	0
1971	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	0
1973	0	0	0	0	0	0	0	0	0
1974	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0
1979	0	1	0	0	0	0	0	0	1
1980	0	0	0	0	0	0	0	0	0
1981	1	0	1	0	0	0	0	0	2
1982	0	0	0	0	1	0	0	0	1
1983	1	0	0	1	0	0	0	0	2
1984	0	0	0	0	0	0	1	0	1
1985	1	1	0	0	0	0	0	0	2
1986	0	1	0	0	0	1	0	0	2
1987	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0
1989	2	1	1	0	1	0	0	1	6
1990	0	1	0	0	0	0	0	0	1
1991	0	0	0	1	0	0	0	0	1
1992	0	0	0	0	0	0	0	0	0
1993	1	1	0	0	0	0	0	0	2
1994	0	0	0	1	0	0	0	0	1
1995	1	2	1	0	0	0	0	0	3
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0
2000	1	0	0	0	0	0	0	0	1
2001	1	1	1	0	0	0	0	0	3
2002	1	0	0	0	0	0	0	0	1
2003	0	1	0	0	0	0	0	0	1
2004	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0
Total	11	10	6	3	2	1	1	1	35
Percent	31.4%	28.6%	17.1%	8.6%	5.7%	2.9%	2.9%	2.9%	100%

Appendix D – Minimum capital standards by supervisory jurisdiction

British Columbia	MCT (100% minimum)
Alberta	MCT (100% minimum)
Saskatchewan	Assets > liabilities
Manitoba	$4 million, with $1 million unimpaired
Ontario	MCT (100% minimum + 50% supervisory target + company target)
Quebec	MCT (100% minimum + company target)
New Brunswick	$3 million, with $250,000 unimpaired
PEI	$3 million, with $750,000 unimpaired
Newfoundland	$3 million
OSFI	MCT (100% minimum + 50% supervisory target + company target)

Source: Provincial insurance statutes and regulations

Facility Association

By Rachel Dutil, FCIA, FCAS

CAS Study Note
May 2008

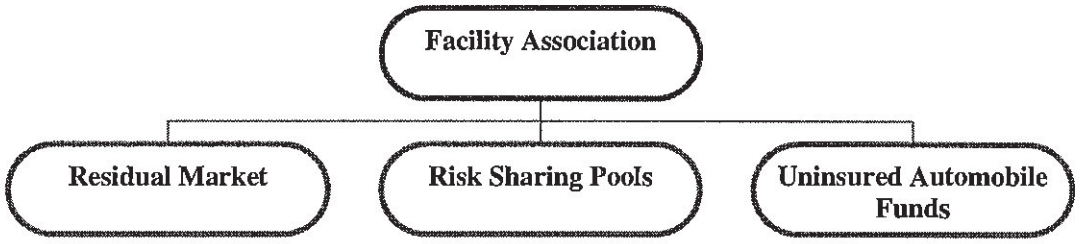
Facility Association

The Facility Association is a Canadian entity whose goal is to ensure that automobile insurance is available for every owner and licensed driver of motor vehicles who require it to legally operate their vehicles. The insurance industry created the Facility Association in June 1977 as an unincorporated, non-profit organization whose role is to administer the involuntary residual market of automobile insurance on behalf of the voluntary/private sector automobile insurance industry across Canada.

Every insurer licensed to write automobile liability insurance in any jurisdictions served by the Facility Association must become and remain a member of this organization. The Facility Association currently operates in the following provinces and territories: Alberta, New Brunswick, Newfoundland & Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward Island, and Yukon. The only provinces in which it does not operate are the three provinces with provincial public automobile insurance (i.e., British Columbia, Manitoba and Saskatchewan) and Quebec.

Organization

The Facility Association, which also operates in Alberta under the name of "Market Availability Plan," accomplishes its mission of ensuring automobile insurance availability through two types of risk sharing mechanisms: risk sharing pools and the more traditional residual market. It also administers the Uninsured Automobile Funds in the four Atlantic Provinces as required by the respective provincial Insurance Acts.



In Quebec, the Groupement des Assureurs Automobiles (GAA) administers a risk sharing pool mechanism called the Plan de Repartition des Risques (P.R.R.) which essentially fulfills the same role as for those administered by the Facility Association in other provinces.

Facility Association Residual Market (FARM)

The FARM provides a residual automobile insurance market for owners and operators of personal and commercial motor vehicles who may otherwise have difficulty obtaining automobile insurance. It operates in all jurisdictions served by the Facility Association.

In each jurisdiction, the Facility Association contracts with a few member automobile insurance companies to issue and administer policies. These insurance companies, known as Servicing Carriers, also adjust claims on behalf of the Facility Association.

All policies written by the FARM through a Servicing Carrier are subject to the rates, rules, and classification of the Facility Association. These rates, rules, and classification require regulatory approval for all jurisdictions served by the FARM.

Facility Association

Under the FARM, agents and brokers who are unable to find automobile insurance coverage for one of their clients can contact a Servicing Carrier who will issue a Facility Association policy for the particular client. As a result, every policyholder insured through the FARM knows that their insurance policy is part of the residual market.

It is important to note that the Facility Association only allows Servicing Carriers to underwrite policies under its FARM mechanism if the policy includes at least the statutory minimum automobile coverage in the jurisdiction concerned and the particular risk is a "Residual Market Risk." In all other cases, the agent or broker must place the risk with their voluntary insurance markets. The Facility Association's Plan of Operation defines a Residual Market Risk as a risk which includes coverage in connection with:

1) any motor vehicle that is not a Private Passenger Vehicle; or

2) any Private Passenger Vehicle with respect to which an insurer to whom an application has been made to insure the risk is authorized at law to decline to issue or refuse to renew a contract of insurance in respect of such risk.

The financial results of the vehicles insured through the FARM are pooled among all insurance companies licensed to write automobile insurance in the province based on participation ratios described below. This is due to the fact that every insurance company licensed to write automobile insurance in a jurisdiction served by the FARM is required by law to belong to the Facility Association.

Risk Sharing Pools

The risk sharing pools allow automobile insurance companies to transfer certain of their personal automobile insurance exposures to an industry-wide pool. While these exposures do not qualify for the FARM, insurance companies believe that they represent a higher risk of loss. As such, risk sharing pools essentially act as industry-wide reinsurance mechanisms that are largely invisible to both consumers and intermediaries.

The Facility Association administers risk sharing pools in Ontario, Alberta, New Brunswick, and Nova Scotia. In each of these jurisdictions, member companies underwrite individual policies according to their own rates and rules. They then have the option of keeping such business for their own account or transferring it to the risk sharing pool based on certain minimum requirements. However, the act of transferring a specific risk to a particular risk sharing pool must be invisible to both the consumer and the insurance intermediary.

Similar to the FARM, the financial results of the risk sharing pools are pooled among all insurance companies licensed to write automobile insurance in the province, who are required by law to belong to the Facility Association.

The Uninsured Automobile Funds

In the four Atlantic Provinces (i.e., New Brunswick, Newfoundland & Labrador, Nova Scotia, and Prince Edward Island), the Facility Association also administers funds which provides financial compensation for damages to persons who cannot obtain satisfaction for their damages under a contract of automobile insurance and where there is no other insurance or where the other insurance is inadequate with respect to the damages claimed. The respective provincial Insurance Acts govern the payment of these claims.

The Facility Association monitors the investigation, defense and final settlement of these claims through the assistance of designated law firms and insurance companies.

Board of Directors and membership rights

The Board of Directors, composed of elected or appointed representatives from member insurance companies as well as insurance brokers, manages and controls the affairs and business of the Facility Association. The Board has the authority to implement many key decisions on behalf of the Facility Association. Some examples of these responsibilities, which are explained in further details in Facility Association's Plan of Operation, are:

— Considering and approving suggested rate changes and rate filings

— Authorizing expenses

— Establishing and maintaining standards to be followed by Servicing Carriers and members using a risk sharing pool

— Appointing committees and sub-committees to assist them with specific issues

As mentioned above, every insurer licensed to write automobile liability insurance in any jurisdiction in which the Facility Association is qualified to operate is required to be a member of the Facility Association.

Members of the Facility Association may vote on matters submitted to them by the Board of Directors. A member's total volume of automobile third party liability direct written premiums for the latest available full calendar year in all jurisdictions in which the Facility Association has operated determines the number of votes that it is entitled to. If a particular matter affects a single jurisdiction, then only members operating in such a jurisdiction can cast their votes, and the respective weight of their votes will depend on their premium volume in the jurisdiction.

For more information on the specific rules regarding the Board of Directors and the rights of member companies, please refer to the Facility Association's Plan of Operation.

Participation Ratios and Sharing

The Facility Association's Plan of Operation lists five classes of business that determine a member's participation in the Facility Association:

1) Private passenger non-fleet non-pool automobile business

2) All automobile business other than that included in (1) or transferred to a risk sharing pool

3) Business transferred to a risk sharing pool other than a pool operated in Alberta, New Brunswick, or Nova Scotia and other than a catastrophic claim fund established to facilitate the payment of Ontario statutory accident benefits claims due from a specified insolvent insurer

4) Business transferred to a risk sharing pool operated in Alberta, New Brunswick, or Nova Scotia

5) All uninsured or unidentified motorist claims and all amounts expended in connection with a pool or catastrophic claim fund established to facilitate the payment of Ontario statutory accident benefits claims due from a specified insolvent insurer

The Facility Association uses each member's participation ratio, which it determines separately for each of the above classes of business, to allocate the profit or loss for the each of the above classes of business at the end of each fiscal year. The basis of determination of the participation ratio varies by jurisdiction. According to the Plan of Operation, the Facility Association must determine the profit or loss separately for each accident year, in each jurisdiction.

Risk Sharing Pools

There are currently five risk sharing pools operating in Canada. The key purpose for each of these pools is to assist the member companies who provide automobile insurance under their normal rates and underwriting rules to certain owners and licensed drivers who represent a higher risk of loss when compared to the company's overall portfolio.

The Facility Association, in its role as the administrator for all five risk sharing pools, dictates through its Plan of Operation the various rules that insurers should follow in order to participate in this risk transfer mechanism. Each of the risk sharing pools operates in one specific jurisdiction, and member companies operating in this jurisdiction can transfer risk into the pool.

It is important to understand that the Facility Association designed the risk sharing pools to promote stability in the marketplace by making it possible for companies to accept risks for which they believe that their prices are not totally adequate. Therefore, the general expectation is that risk sharing pools, by their very nature, will operate on an overall basis at a financial loss.

Every company shares in the financial results of a particular pool based on a participation ratio determined using a proportion of their total voluntary private passenger, non-fleet, third party liability direct earned exposures (car years) that is not ceded to a risk sharing pool for the applicable province. For Ontario, the participation ratio also depends on the number of risks ceded to the risk sharing pool. (Please refer to the Facility Association's Plan of Operation for more details on the participation ratios.) As every automobile insurance company licensed to do business in a specific province is required to be a member of the Facility Association, a company who decides not to transfer any of its risks to the risk sharing pool will still be allocated a share of the total financial results of the pool.

Facility Association

There are five minimum requirements that a risk must meet in order to be eligible for transfer to one of the pools:

1) Each pool accepts only private passenger vehicles.

2) A residual market risk should be insured through the FARM and is therefore not eligible to for the risk sharing pools.

3) Each risk transferred into the pool should carry at least the minimum third party liability statutory limit required in the applicable province.

4) The member company must follow the appropriate classification and rating procedures and have requested all appropriate documentation.

5) The premiums charged for the insurance transferable to the pool must be the approved premiums for such a risk.

For each of the risks transferred, it is up to the member company who performs the underwriting to provide the coverages and limits that it finds appropriate for such a risk. However, each of the pools has specific limitations that define the proportion of each eligible risk that can be transferred to the pool. There are also limitations on the transfer of certain coverages (e.g., maximum limits or minimum deductibles). Member companies who decide to offer higher limits or lower deductibles must therefore carry the excess coverages on their own accounts.

One other common requirement for the pools' operations relates to the actual transfer of premiums. For each risk, the transfer premium should be the premium actually charged by the insurance company for the applicable limit or deductible, net of premium payment service charges charged to the insured. The member company will then receive a percentage of the transferred written premium as an expense allowance to settle all incurred expenses including acquisition, operating and loss adjustment costs but not including premium tax and professional fees.

Finally, for each of the pools with specific restrictions on the total allowable transfer from each member company, the transfer limits are a percentage of the voluntary private passenger non-fleet third party liability direct written car years for the applicable province in the immediate preceding calendar year.

Ontario Risk Sharing Pool

The Facility Association established the Ontario Risk Sharing Pool in 1993. It was the first automobile risk sharing pool in Canada. This pool assumes business from Ontario member companies for Ontario risks only, subject to the minimum transfer requirements listed above.

One difference for the Ontario Pool is that the pool only covers 85% of every risk transferred while the remaining 15% stays in the account of the member company. All other pools cover 100% of the risks transferred, subject to the applicable maximum limits and minimum deductibles for the coverages provided.

Facility Association

To ensure that the Ontario Risk Sharing Pool does not serve as a marketing tool by member companies, the Facility Association has set the maximum total allowable transfer to 5% of the member's voluntary private passenger non-fleet written exposures.

Alberta Risk Sharing Pool

The Facility Association administers two risk sharing pools in Alberta: a "Grid Pool" and a "Non-Grid Pool". Both of these pools commenced operations on October 1, 2004 and assume business from Alberta member companies for Alberta risks only. One of the main differences between the two pools is the number of risks that companies may transfer to each.

The "Grid Pool" allows Alberta automobile insurance companies to transfer into the pool their private passenger insurance exposures that are subject to the statutory maximum premium. There is no limit to the number of risks that a member company can transfer into the Alberta "Grid Pool". This is based on the philosophy that the law requires insurance companies operating in Alberta to accept risks for which they have no control over price, resulting in little to no control over the financial results for this particular book of business.

The "Non-Grid Pool" is similar to the Ontario Risk Sharing Pool. It allows member companies to transfer to the pool any eligible private passenger automobile insurance exposure they underwrite which exhibits higher risk characteristics. However, the Facility Association has set the maximum total allowable transfer to 4% of the member's voluntary private passenger, non-fleet, written exposures that are not transferred to the Grid Pool. The purpose of the Non-Grid Pool is to help companies cope with the "take all-comers" environment in Alberta.

New Brunswick Risk Sharing Pool

The New Brunswick "First Chance" Risk Sharing Pool commenced operations on January 1, 2005. This pool assumes business from New Brunswick member companies for New Brunswick risks only, subject to the minimum transfer requirements previously described.

The New Brunswick Risk Sharing Pool provides a means for New Brunswick insurers to transfer private passenger automobile insurance exposures for which at least one household member is entitled to receive the "recently licensed drivers with good driving records" discount (also called the "First Chance" discount).

Similar to the Ontario Risk Sharing Pool and the Alberta Non-Grid Pool, the Facility Association set a maximum total allowable transfer of 8% of the member's voluntary private passenger, non-fleet, written exposures for insurers participating in this pool.

Nova Scotia Risk Sharing Pool

The "Inexperienced Driver" Risk Sharing Pool is the most recent pool created by the Facility Association. It commenced operations on January 1, 2007. This pool assumes business from Nova Scotia member companies for Nova Scotia risks only.

Facility Association

The key characteristic of this pool is that it is designed to accommodate inexperienced drivers with good driving experience. Therefore, in addition to the minimum transfer requirements listed above, companies can only transfer risks for which at least one household member is a driver with less than six years of driving experience and who did not have any accidents or convictions over that period.

Similar to the Alberta Grid Pool, there is no limit to the number of risks transferred by members to the Nova Scotia Risk Sharing Pool.

Conclusion

The Facility Association is an organization that was created by and for the Canadian insurance industry. It serves a very important role in ensuring the availability of automobile insurance coverage for Canadian drivers. This study note summarizes some of the key elements of the operations of this organization. For further information and details regarding the topics covered above, please refer to the Facility Association's Plan of Operation.

ICBC

Affordable and effective auto insurance – A new road forward for British Columbia

10 July 2017

EY

Building a better working world

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1. Introduction

1.1 Context for review

Over the past several years, the Insurance Corporation of British Columbia (ICBC) has experienced rapidly increasing vehicle repair and bodily injury claims costs, as well as a concerning increase in the number of car crashes on BC roads. This represents a significant change from the steadily declining accident rates and relatively stable premiums that had occurred over the previous decades. These new trends are causing concern about the long-term affordability of auto insurance within the province. The government, board and management of ICBC have become increasingly concerned about these negative trends and undertook a series of significant cost reduction initiatives[1] to flatten the organization and increase the efficiency of its claims operations and procurement processes. In addition, the Province of British Columbia introduced much stricter impaired driving enforcement in 2010 through the Immediate Roadside Prohibition program, moved to significantly increase penalties for distracted driving in 2016, doubled Basic premiums for high-value vehicles starting in 2017 and increased accountability for drivers who cause multiple crashes by having them lose their safe driving discounts faster than they have previously[2]. However, it has become apparent that these initiatives will not be enough to overcome the spike in accidents and escalating claims costs. In December 2016, the Minister of Transportation and Infrastructure directed the board of directors to initiate a comprehensive external review[3].

While other jurisdictions both in North America and abroad have also experienced increased claims costs, many have undertaken major changes to their auto insurance schemes to mitigate pressure on rates. British Columbia has been able to maintain essentially the same auto insurance scheme since 1973 but increasing financial losses and a limited public appetite for higher premiums bring into question whether this system is sustainable without significant reform or direct government financial support on a go-forward basis.

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[1] Including such initiatives as the Crown Corporation Core Review 2012, Claims Operations Review 2014, management and FTE reductions, implementation of new claims and insurance platforms, windshield repair policy, transforming the organization's legal function, anti-fraud program, strategic sourcing programs for auto repair and medical services, and starting in 2016 foregoing "dividends".

[2] Increased crash accountability effects policies renewed after May 6, 2018.

[3] "As the Minister responsible for ICBC, I am directing the ICBC Board of Directors to commission a comprehensive independent third party review. The objective of this review is to provide a wide range of options for ICBC and Government's consideration that would increase fairness and affordability related to Basic insurance, with the goal of future Basic rate increases being in line with the rate of inflation. Furthermore, it is Government's intention to maintain public ownership of ICBC, and to work within the current model in order to keep Basic automotive insurance as affordable as possible for British Columbians." (Letter from the Honourable Todd Stone to Mr. Barry Penner, Board Chair ICBC - Dec 19, 2016).

1.2 Scope

EY was selected through a competitive process to undertake an independent review of ICBC (the Review), with the objective of obtaining a range of options for ICBC and the BC government to consider that would increase fairness and affordability related to Basic insurance, with the goal of keeping future Basic rate increases in line with the rate of inflation (~2%).

The Review includes comparing ICBC against other relevant jurisdictions across Canada and internationally (including the UK, Australia, New Zealand, the US and select European countries) in the areas of road safety, operational and financial performance, investment management, governance and product design, as well as considering other potential revenue-generation opportunities.

The Review was based on the premise that ICBC would remain publicly owned, with the mandate to provide affordable Basic auto insurance for all BC motorists. It has been grounded on the application of five guiding principles for a modernized insurance program: *affordability*, *efficiency*, *sustainability*, *fairness* and *simplicity*. These guiding principles are seen as an essential framework to underpin potential solution options for ICBC and the BC government's review.

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1.3 Structure of this report

This report is structured to present the following:

- Executive summary
- An overview of auto insurance in BC today
- Challenges to the current system, with discussion on what an effective system should deliver and comparison to performance of other global jurisdictions
- Potential reform options, focused on road safety, policy and product
- Interim measures that should be initiated while reform is under development
- Summary conclusions and implementation plan

1.4 Risks and uncertainties

There is always uncertainty associated with actuarial estimates. Estimates of future claims experience (claim numbers and payments) are inherently uncertain because they depend on the outcome of future events that cannot be forecast precisely. Examples of influences on claims experience that are particularly challenging to forecast include changes to social, economic and legal environments. Therefore, actual claims experience may emerge at levels higher or lower than the actuarial estimates.

When dealing with legislative reforms, the degree of uncertainty in estimating the cost of the future product design increases substantially. A major part of this increased uncertainty relates to the changes in behaviour of claimants and their representatives, and this is difficult to predict. We have drawn on the experience of product changes in other auto schemes in Canada and internationally as a guide to plausible changes in behaviour in our cost estimates. This uncertainty of the cost estimates has a consequential impact on the extent to which product changes need to be varied to achieve the cost and premium reduction objectives outlined later in this report. While we have assumed plausible changes in behaviour as reflected in reductions in claim numbers and legal representation in our work, other relevant assumptions could also be chosen.

The emerging costs of any product design depend on how well the changes are implemented, and in particular, how well claims are managed. The effectiveness of claims management can have a major impact on the extent to which the estimated claim costs savings are realized.

In relation to cost estimates for savings from road safety initiatives, ICBC operational efficiencies and non-insurance initiatives, there is also significant uncertainty whether the savings and additional revenue will be achieved. The estimates in this report are based on analysis and research undertaken by EY and are also based on a review of work undertaken by ICBC.

1.5 Reliance and limitations

In undertaking this assessment, reliance has been placed upon publicly available data and data provided to EY by ICBC in respect of the current ICBC auto insurance system. We have reviewed this information for reasonableness, but without independent audit or verification. The accuracy of our results is dependent on the accuracy and completeness of this data.

It is essential that any reader of this report understand its associated qualifications and limitations.

Judgments regarding the data, methods and assumptions contained in this report should be made only after studying the entire report, as conclusions reached by a review of a section or sections on an isolated basis may be incorrect.

1.6 Glossary

Term	Definition
Accident year	Denotes the year in which the vehicle accident giving rise to the claim occurred.
Basic insurance	Mandatory Coverage required for a vehicle in British Columbia. Provides a minimum level of coverage that includes a minimum level of third party liability coverage, medical cost and wage loss reimbursement.
BC	British Columbia
BCUC	British Columbia Utilities Commission
BI	Bodily Injury
Commissions	Refers to payments made to agents/brokers by insurers for writing ICBC insurance plans on behalf of the insurer.
Casualty	Any person killed or injured as a result of an accident attributable to the movement of a road vehicle on a road, as recorded by Police Traffic Accident System.
Claim liability discount rate	Rate used to discount expected future claim payments for calculating provision for unpaid claims.
Claim frequency	Ultimate number of claims divided by the number of vehicles.
Claim severity	Cost per insured claim
Cost per policy	Total cost of claims divided by the number of insured motor vehicles in BC.
Dividend	Excess optional capital transfer to Government
Driver risk premium	Each year just prior to a driver's assessment date (which is usually your date of birth), ICBC will review your driving record for offences in the previous three years. This provides a more accurate prediction of the risk a driver represents.

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Term	Definition
FARM	Facility Association Residual Market. The FARM is established by regulation in the private sector provinces, and automobile insurers licensed in these provinces must be members. Should an insured, such as a high-risk driver, not meet the eligibility requirements of an insurer, they must be provided insurance by the FARM. As such, the FARM market share is a measure of availability in the private sector.
General damages	See Non-pecuniary damages
Incurred claims cost	Claim payments to date plus case estimates.
High-value vehicle (HVV)	Vehicles with a MSRP (Manufacturer's Suggested Retail Price) over $150,000
Loss cost	The average loss per car insured. Also referred to as pure premium.
MCT	Minimum Capital Target
Non-pecuniary damages	Also referred to as "general damages", non-pecuniary damages are for "pain and suffering", sometimes also described as "loss of enjoyment of life". These damages are supposed to compensate the claimant for having to experience symptoms caused by the accident, having a loss of expectation of life, etc.
Non-insurance services	ICBC business line that provides driver licensing services, vehicle licensing and registration services, and fines collection on behalf of the provincial government.
Optional insurance	Optional coverage offers protection for a driver's vehicle, additional third party liability and other protection such as loss of use coverage.
Propensity to claim	Ultimate number of claims divided by the number of road casualties.
Representation rate	The proportion of claims that have legal representation.
Risk premium	Expected claim payout without expenses and profit margin.
Threshold framework	A hybrid of the Tort and No-Fault frameworks whereby the ability to sue for damages is enabled upon meeting or exceeding a threshold. The threshold is typically expressed as "verbal" (a.k.a "descriptive") or "monetary".
Soft-tissue injury	Generally, an injury that heals within three months. Typically soft-tissue injuries include sprains, strains and whiplashes.

Term	Definition
Statutory discount rate	Statutory rate used to calculate the present value of future damage awards. This rate is set by regulation and is outside the control of ICBC.
Yield on basic equity	Current in yield available on ICBC invested asset holding. Rate is used to discount future claim payments for calculating claim reserves.

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2. Executive summary

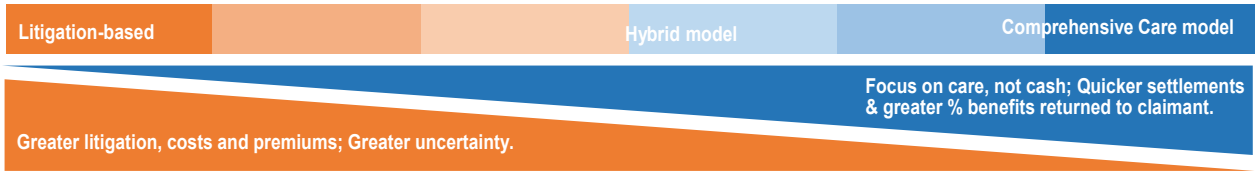
2.1 Auto insurance in BC today

The Insurance Corporation of BC (ICBC) is a provincial Crown corporation created in 1973 to provide universal public auto insurance to drivers in BC through a government owned and operated system. Any vehicle registered for driving in British Columbia must, by law, be covered by ICBC's Basic insurance package (called "Basic Autoplan"), which includes protection from third-party legal liability, under-insured motorist protection, accident benefits, hit-and-run protection and inverse liability (coverage in parts of Canada or the US where local laws can affect a claim). ICBC is the sole provider of this mandatory Basic insurance in BC and has been regulated by the BC Utilities Commission since 2003.

BC drivers also have the ability to buy optional insurance for additional coverage such as extended liability, collision and comprehensive plans. Optional insurance can be purchased from ICBC ("Autoplan Optional") or from a number of competitive private insurance firms.

The auto insurance landscape has evolved greatly across Canada, with a mixture of public and private providers as well as different insurance models in place. British Columbia has a litigation-based insurance model, which allows not-at-fault drivers to sue at-fault drivers for both economic loss (lost wages, treatment costs, material damages) and pain and suffering, regardless of severity of injury. BC is the only province in the country that has not modified this adversarial model. All other Canadian jurisdictions have reformed their insurance schemes over the past 20 years in response to escalating claims costs and concerns regarding affordability. The comprehensive care (or injury) model, as in place in Manitoba and Saskatchewan, does not generally include the right to sue for pain and suffering arising from minor injuries. Certain hybrid models (designed to bring benefits from both models) typically use caps to limit the payment for pain and suffering costs caused by minor injuries.

Chart 1: Spectrum of different auto insurance models, with features of litigation-based models on the left and care-based models on the right



As a public insurer, ICBC has a responsibility to keep Basic automobile insurance prices consistently affordable for British Columbians. Rates are approved through an annual rate filing process governed by the BC Utilities Commission. Historically, vehicle registration and a number of road safety responsibilities have been delivered by ICBC, and beginning in 1996, Motor Vehicle Branch functions were also transferred to ICBC (Driver testing and licensing). In addition, ICBC collects unpaid fines revenue and supports the BC Service Card initiative. The costs to deliver these additional services are borne by the Basic rate payers, and although associated revenues are not returned to ICBC, there are savings arising from changes that have allowed ICBC to directly influence the safety of roads and quality of drivers in British Columbia.

2.2 Challenges to the current system

BC's auto insurance system is facing unprecedented challenges. Premiums collected by ICBC today are higher than other provinces that have shifted away from a predominantly litigation-based model (they are the second highest in Canada), yet they are not high enough to cover the true cost of paying claims. More accidents are occurring on BC's roads, and the number and average settlement of claims are increasing. Only recent government intervention has protected BC drivers from the currently required 15%–20% price increases. This rate protection has eroded ICBC's financial situation to a point where it is not sustainable. **The average driver in BC may need to pay almost $2,000 in annual total premiums[4] for auto insurance by 2019, an increase of 30% over today's rates, assuming current trends persist, the objective is to have ICBC's rates cover its costs, and significant reform is not undertaken.**

In summary, the BC auto insurance system has significant structural problems. However, based on the experience of other jurisdictions, there are proven solutions available — but this additional work needs to start now. This report sets out in detail the key issues putting significant pressure on auto insurance premiums in BC. It also identifies a series of impactful solution options to underpin reform and support a safer, sustainable system.

Issue	Target outcome
1. More accidents on BC's roads are resulting in more claims	• Increasing the effectiveness of BC's road safety approach will change high-risk driver behaviours and result in fewer accidents on BC's roads
2. The number of claims being filed is going up faster than the number of accidents	• A re-design of the current insurance product will change claimant behaviour, and keep costs and premiums under control
3. Average settlements for minor injuries (such as minor soft-tissue) are increasing	• Focus will shift from cash to claimants' care and treatment, available to claimants sooner for more effective results
4. Claim costs for minor injuries have increased from 30% to almost 60% of total bodily injury claims costs since 2000	• Costs of pain and suffering will be limited, along with increased focus on lifetime care and a significant reduction to legal costs and disbursements
5. Insurance premiums collected by ICBC do not cover claim costs	• Rates will be more affordable and sustainable for the long term

[4] $2,000 is the total consumer spend reflecting true expected claims costs on Basic and Optional coverages.

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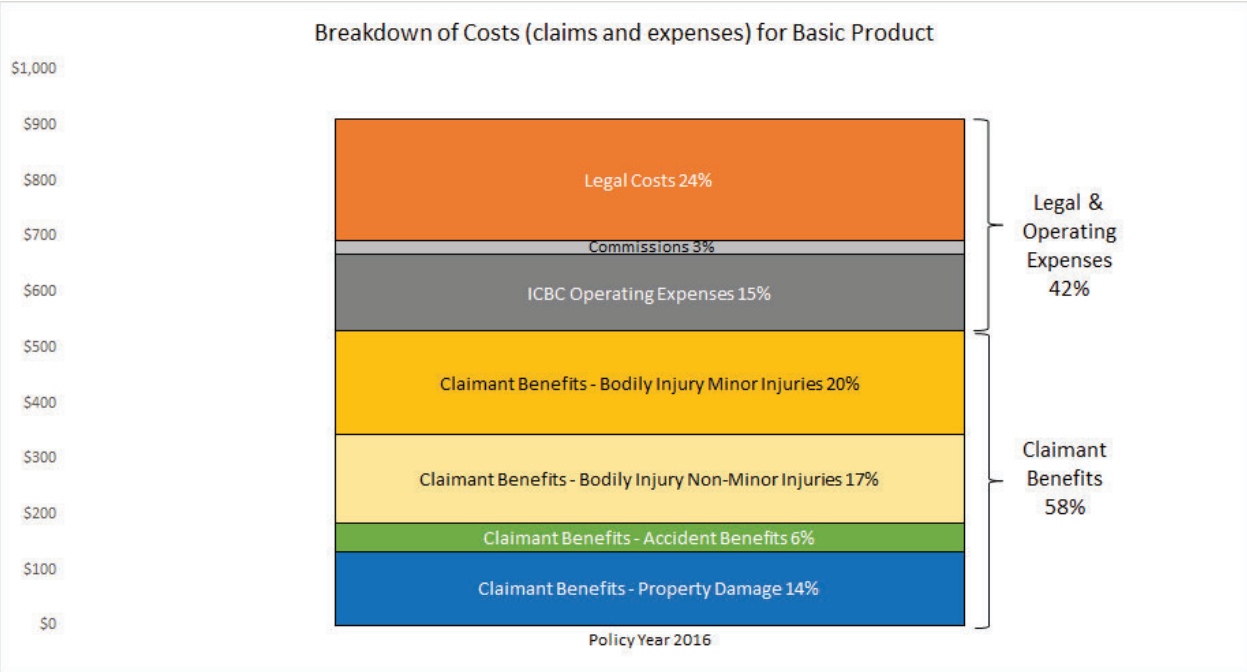
Chart 2 below shows the breakdown of costs and expenses in 2016 incurred against BC's Basic insurance product. Of note, minor injuries account for more annual cost than serious or catastrophic injuries, and legal costs are higher than either of these costs.

Chart 2: Breakdown of costs and expenses

- Minor injuries account for 20% of total annual cost, while serious and catastrophic injuries account for less at 17%. In most other jurisdictions, minor soft-tissue injury costs are only about half of more serious or catastrophic injuries.
- Legal costs account for 24% of total annual costs, greater than the cost to run ICBC and benefits received by either minor injuries or non-minor injuries.



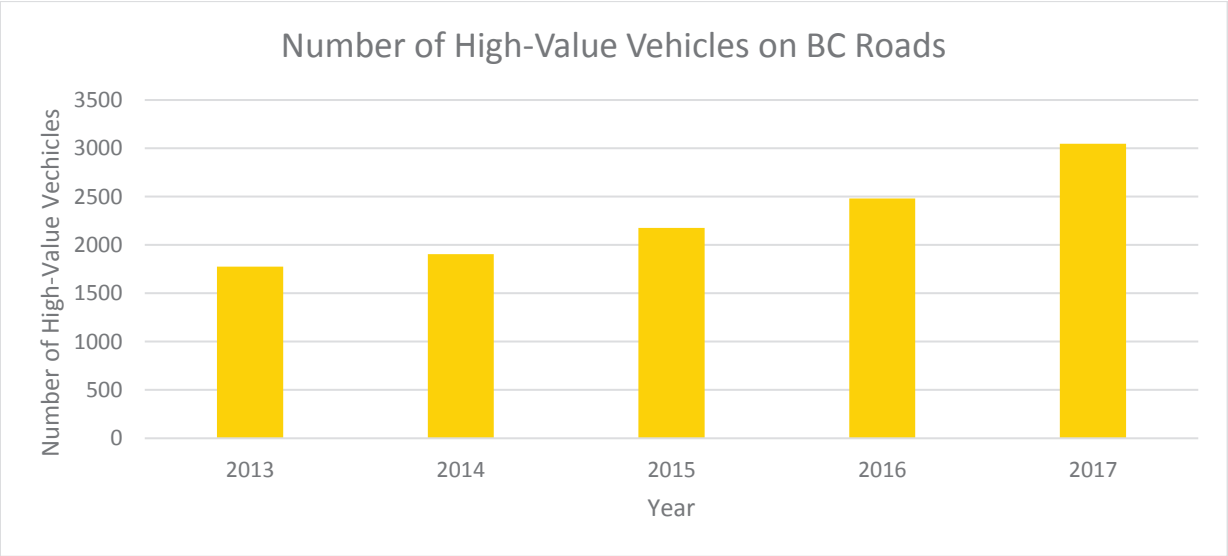
Note: ICBC operating expenses for Basic product compare favourably to the national average of Canadian property and casualty insurers

Issue 1: Accidents and claims are on the rise in BC

Despite decades of car and road safety enhancements and long-term improvements in the number of crashes on BC roads, data from both ICBC and Transport Canada reveals a recent upward swing in the number of road accidents. ICBC data shows that approximately 20,000 additional crashes per year have been taking place in BC since 2013 (a 23% increase between 2013 and 2016). Given the focus globally on road safety – including safer vehicles, safer road infrastructure and preventing high-risk driving behaviours – an increasing trend in crashes on BC roads is a serious issue. Our research indicates that there are other jurisdictions around the world that are recently experiencing the same trend.

Further, ICBC's vehicle repair costs have also increased by more than 30% in the past two years to a total of $1.5b in 2016. This is being driven by the increased number of crashes, rising labour costs, as well as the fact that vehicles today are more reliant on technology and expensive materials than ever before. In BC, there are approximately 70% more high-value vehicles (MSRP greater than $150,000) on the road today than there were four years ago.

Chart 2b: In BC, the number of high-value vehicles[5] is increasing annually[6]



[5] Vehicles with a MSRP (Manufacturer's Suggested Retail Price) over $150,000

[6] Count represents the number of vehicles insured as of May 31 each year.

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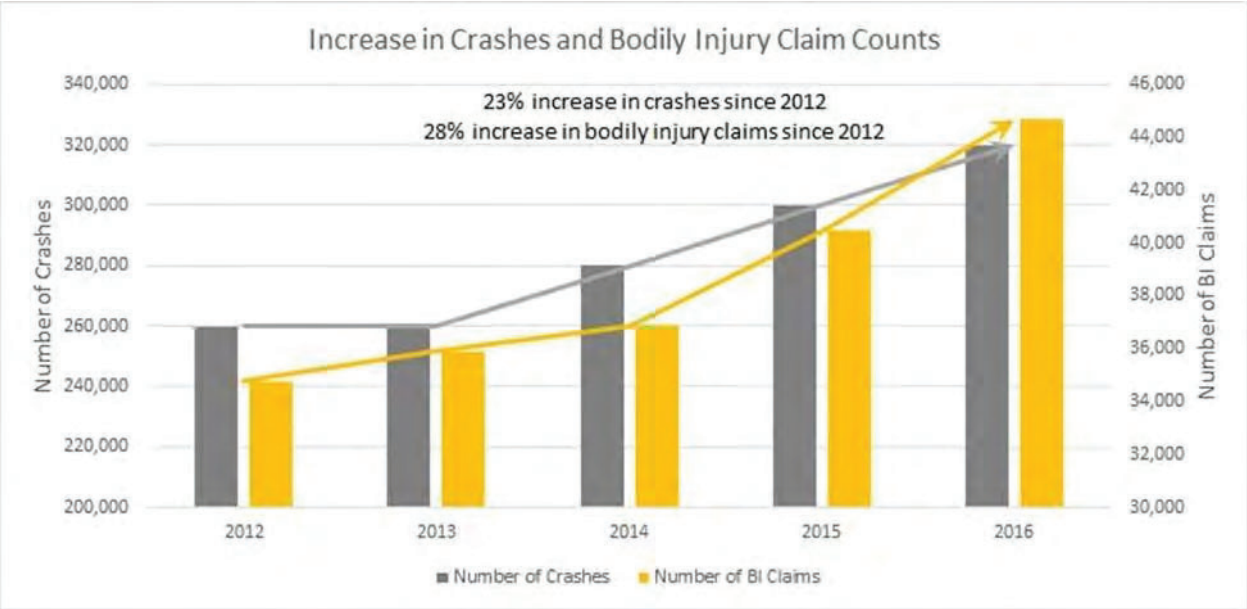
Issue 2: The number of claims being filed is going up faster than the number of accidents

It is not surprising that more road crashes would lead to a higher number of claims; however, in BC the rate of claims is significantly outpacing the rate of crashes. There are more claims per crash being filed, and this highlights a second issue.

Chart 3: In BC, the rate of claims is significantly outpacing the rate of crashes

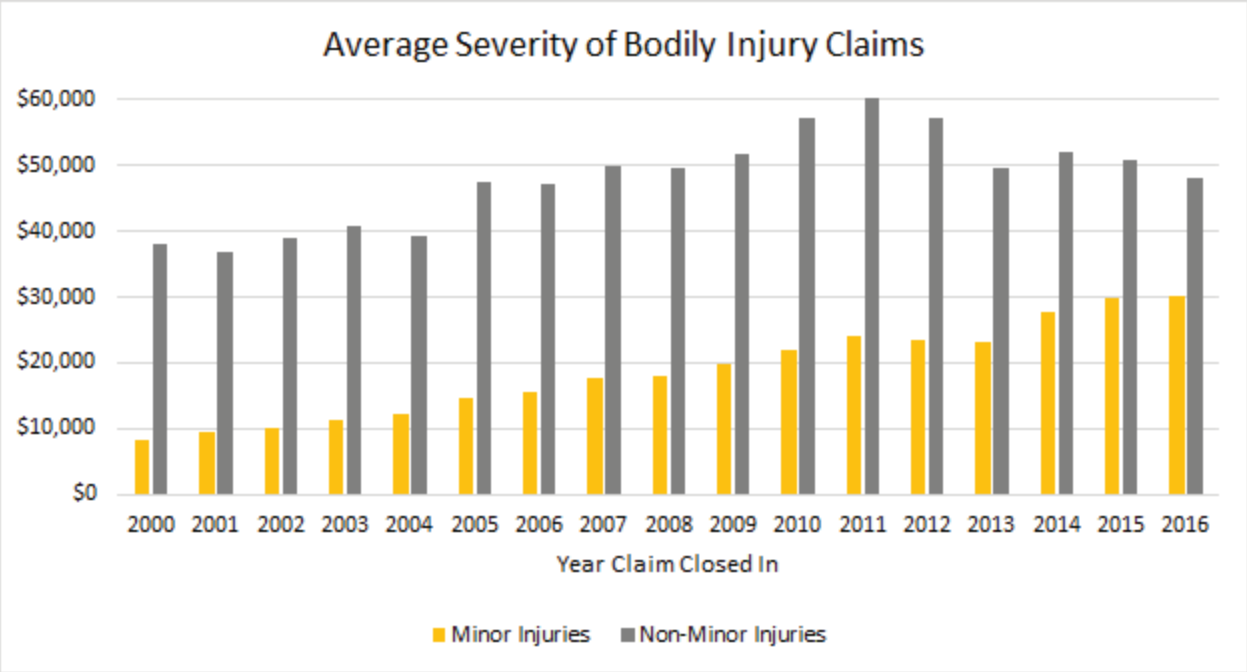


Issue 3: Increasing average settlements for minor injuries

The increase in the number of claims being filed is primarily driven by minor injury claims. The increasing number of minor injury claims has been further exacerbated by the higher cost of settling these claims, particularly for pain and suffering. An average bodily injury claim for a minor injury in the year 2000 paid out $8,220, compared to an average of just over $30,000 in 2016. See chart 4a and 4b below.

Chart 4a: Significant increase in the size of claims for minor injuries over the past 15 years

- The average paid out for bodily injury claims has increased almost four-fold for minor injuries, compared to an approximate 25% increase for serious and catastrophic injuries, with minor injuries approaching the average settlement amount received by more seriously injured claimants.
- The average claim paid out for minor bodily injuries has risen from $8,220 in 2000 to $30,038 in 2016, an increase of 365%.
- The average bodily injury claim paid out for a non-minor injury was $38,014 in 2000 and $48,078 in 2016, an increase of 26.5%.



*Note: Costs in chart 4a include all non-expense components of bodily injury claim costs (pain and suffering, wage loss, special damages, future care, costs and disbursements, and court order interest)

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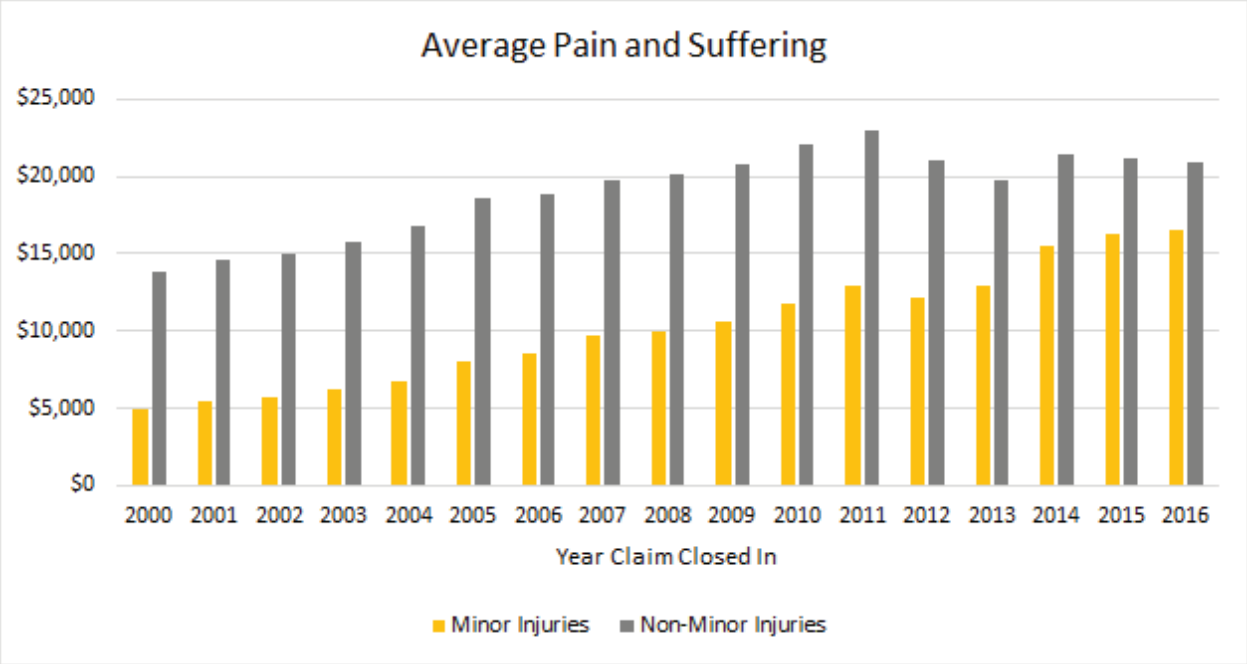
Chart 4b: Pain and suffering awards have risen significantly, driving increase in size of claims for minor injuries

- The average pain and suffering paid out for minor bodily injuries has risen from $5,004 in 2000 to $16,499 in 2016, an increase of 330%.
- The average pain and suffering paid out for a non-minor injury was $13,789 in 2000 and $20,954 in 2016, an increase of 52%.

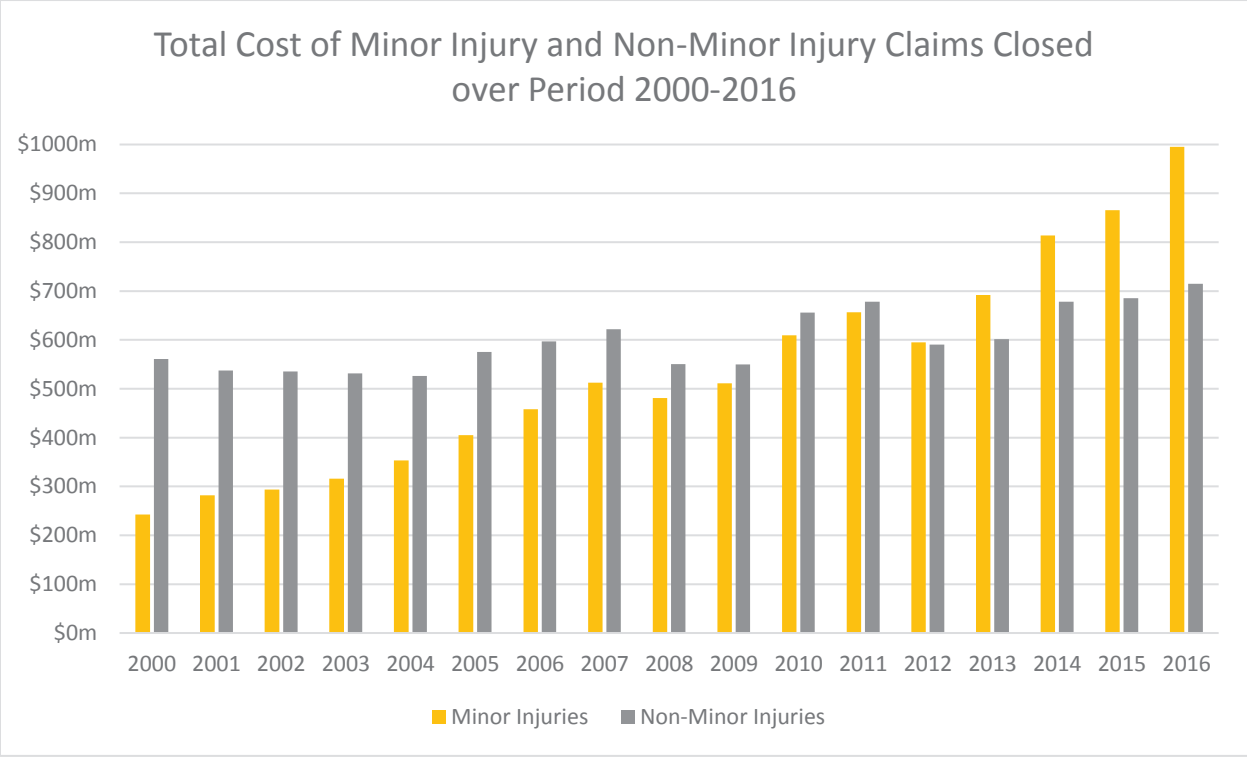


Issue 4: Claim costs for minor injuries have increased from 30% to almost 60% of total bodily injury claims costs since 2000

Since 2012, the total annual cost for minor injury claims has been greater than the total costs of serious and catastrophic injury claims. In 2000, minor injuries represented 30% of total bodily injury claim costs. In 2016, minor injury claim costs totaled $995 million compared to serious and catastrophic injuries costing approximately $715 million, meaning minor injuries represented 60% of total bodily injury claim costs. This imbalance in the costs of minor and non-minor injuries highlights a fourth issue.

Chart 5: Total annual claim costs for minor injuries are now greater than serious and catastrophic injuries

- Minor injury claims in 2016 cost in excess of $995 million, compared to serious and catastrophic injuries, which cost approximately $715 million.



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Issue 5: Rising cost of auto insurance in British Columbia

Affordability is a fundamental principle of auto insurance in BC. Given that Basic auto insurance is compulsory, the Basic plan has been designed to be delivered at a price that drivers can afford and not to generate a profit for ICBC.

BC auto insurance premiums have been steadily increasing over the past six to seven years, in large part driven by the increasing number and average settlement of claims being generated. Over the period of 2011 to 2015, average premiums rose by $130, or 11%. Premiums have continued increasing to the point that today the average BC driver pays $1,550 per vehicle each year for auto insurance,[7] and they would be paying much more than this if the true costs were being borne by consumers instead of being subsidized by temporary financial measures. In addition, while Optional insurance profits have traditionally been used to offset losses on the Basic product, due to the trends outlined earlier, continued reliance on Optional insurance profits to manage Basic insurance rates is not a sustainable solution[8]. By the measure of affordability alone, BC's auto insurance system faces significant pressure. Premiums collected by ICBC today are the second highest in Canada, yet they are not high enough to cover the cost of paying claims.

Indeed, there is a significant and growing gap of $560m today[9] between the premiums collected under the Basic product and claims costs. With the trend of increasing crashes and claims costs in BC, this **gap is projected to increase to $1.1 billion annually by 2019 if it is not addressed.** See charts 6 and 7 below.

Recently, BC drivers have been protected from the currently required 15%–20% price increase only through government intervention and rate-smoothing mechanisms designed to avoid sudden material year over year changes to insurance rates. **This rate protection has eroded ICBC's financial situation to a point where such efforts are not sustainable. The average driver in BC may need to pay almost $2,000 annual total premiums for auto insurance by 2019, an increase of 30% over today's rates, assuming current trends persist, the objective is to have ICBC's rates cover its costs, and significant reform is not undertaken.**

This is the fifth issue.

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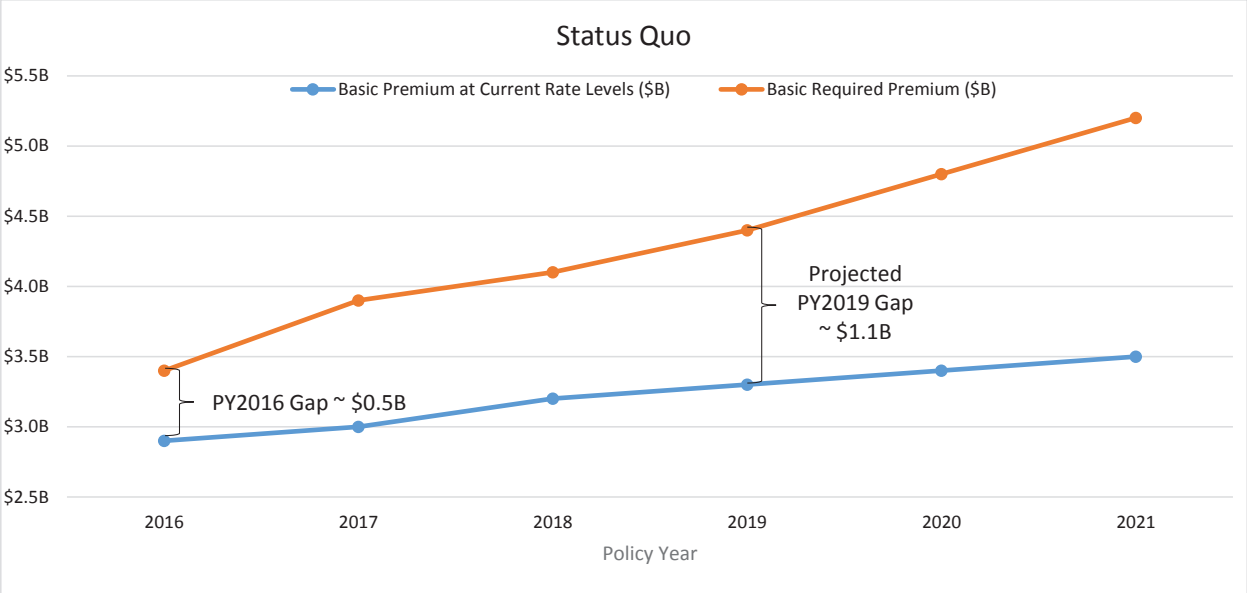
[7] $1,550 premium represents both Basic and Optional premiums, for a total consumer spend

[8] Optional insurance suffered a loss of $311m in fiscal 2016/17

[9] Assuming premium increases of 2%, in line with rate of inflation

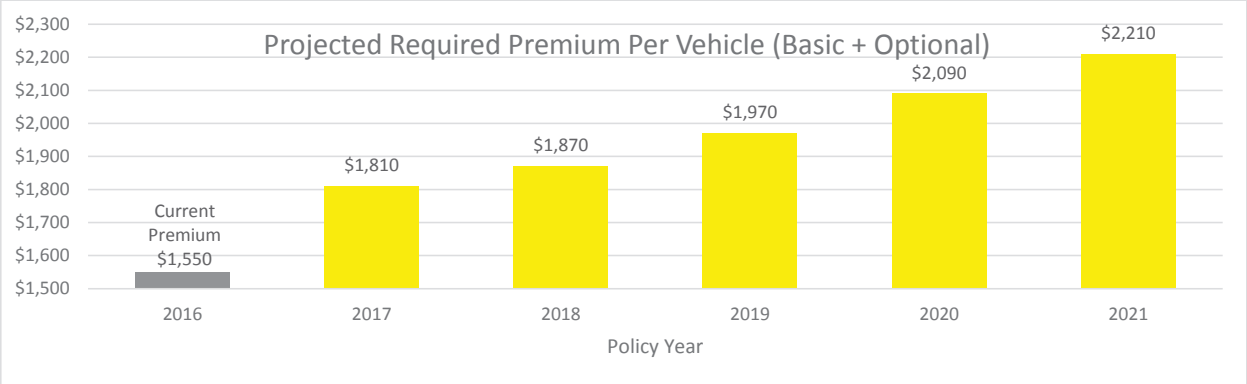
Charts 6 and 7: Projected required premiums by 2019

- Required premium is the premium that would need to be collected to sufficiently cover costs and expenses net of investment income and service fees.
- If premiums are kept at current rate levels, this would result in a rate gap of over $1.1 billion in 2019.



(Note: assumes 1.7% growth in policies sold year over year and 2% rate increases each year)

- Without significant action, the average driver in BC will need to pay $1,970 (almost $2,000) per year for auto insurance by 2019, an increase of almost 30% from current premium in order to prevent further financial losses by ICBC.



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2.3 Summary of findings

BC's auto insurance system has significant structural problems and requires reform

The issues highlighted above point to a significant structural problem within the BC auto insurance system: the rising number and size of claims, larger cash settlements for minor injuries, and more claims costs going towards legal representation than to claimants, all of which has led to the unsustainability of the current model. **Fundamentally, auto insurance in BC has structural problems and requires major reform to resolve these issues.**

Very similar to the observations of the recent auto insurance system review in Ontario (Marshall Report, April 2017), these issues in BC have not materialized overnight. BC's public auto insurance system has been in place since 1973; while for the most part it has delivered a stable and affordable product to the citizens of BC, recent increases in the number of crashes and claims have highlighted a number of issues that need reform. There is no indication that the underlying issues will correct themselves. Reform will need to take a comprehensive view of a number of interrelated components that make up the system.

This review has identified a number of opportunities to address the current failings of the system. For simplicity, these opportunities have been presented as three priority initiatives as follows:

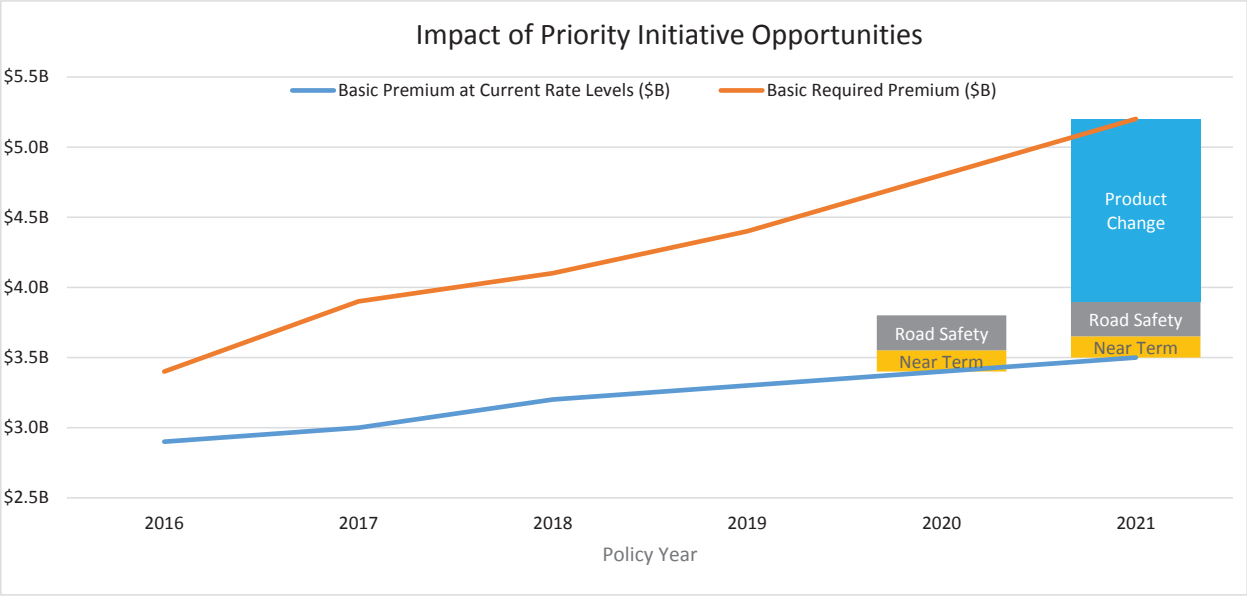
- Firstly, there is a need to increase the effectiveness of BC's road safety approach. Successfully changing high-risk driver behaviours will result in fewer accidents on BC's roads;
- Secondly, a re-design of the current insurance product is required. This is where the bulk of the savings will come from. Successful change will alter claimant behaviour, reward safer driving, increase fairness, and keep costs and premiums under control; and
- Thirdly, a set of additional interim measures should be initiated by ICBC in the near term (such as continued process and productivity improvements and changes to the risk rating model) that will have an incremental impact to the future performance of ICBC and BC's auto insurance system and lay a platform to enable successful reform.

This section presents a range of solution options for these three opportunity areas, targeted at the key drivers of cost and overall performance of the BC system.

The chart below shows how the three opportunity areas contribute towards addressing the projected rate gap and required premiums. This is illustrative in nature, shown as contributions to the rate gap by 2020/21, and does not account for implementation costs and timelines to achieve these savings over the period.

- Near-term interim measures could generate up to $150 million savings and revenues towards the rate gap.
- A focus on additional road safety initiatives could generate over $250 million savings.
- Neither of these two opportunities (even when combined) will have the needed impact to address the growing rate gap; only changes to the current Basic insurance product will address the affordability and long-term sustainability of BC auto insurance.

Chart 8: Potential impact of identified opportunities on the rate gap



(Note: assumes 1.7% growth in policies sold year over year and 2% annual rate increases)

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Opportunity #1: Successful changes in high-risk driver behaviours will result in fewer accidents on BC's roads

Preventing accidents on BC's roads will reduce the tragic human consequences of injuries and loss of life, reduce the number of claims being filed, and save hundreds of millions of dollars.

This report recognizes that many road safety programs, enforcement technologies, laws and penalties have been successfully implemented in BC over the past decades, resulting in improvements in the number of accidents and fatalities occurring on BC roads. With its mandate for supporting road safety in BC, ICBC has played a pivotal role in many of these programs. The report also recognizes that BC's road safety strategy, led by RoadSafetyBC, has recently aligned with international best practices in road safety including adopting the globally recognized "Safe System Approach".

While the overall BC road accident trend over the past decade is positive, the recently observed 23% upswing in crash rates needs to be addressed. In BC, as in many other jurisdictions, the top contributing factors in accidents involving a death or serious injury are speeding in excess of posted limits, distractions and impairment — accounting for 84% of all road fatalities in BC in 2015.

An analysis of initiatives in global jurisdictions with leading road safety performance, such as Australia, New Zealand, the UK and other European countries, highlighted a number of road safety initiatives (some of which are already being deployed in BC today) that, within the next three to five years, could save the system up to $250m annually through reductions in the number and severity of accidents and additional revenue collections for high-risk driving behaviours.

It is further recognized that there is no one silver bullet in terms of road safety initiatives that will solve the problems on BC roads. It requires a systemic approach to address speeding, distracted driving and impairment. Experience around the world indicates that in order to make sustainable changes in driver behavior, the three pillars of education, enforcement and driver penalties must be aligned.

Table 1: Highlighted road safety initiatives could save the system over $250m annually within the next three to five years

- As well as a number of societal benefits, a $250 million annual road safety saving would equate to an approximate $75 premium saving per vehicle.

	Road safety initiative	Annual contribution
Speed	✓ Double the number of intersection cameras and increase activation to 100%* ✓ Automated speed enforcement cameras at high-risk sites ✓ Variable speed limits and point to point speed systems	~ $150m
Distracted	✓ Increase the number of Integrated Road Safety Unit (IRSU) officers by 100 FTEs ✓ "Safe Work" programs (corporate policy and practices) ✓ Technology solutions and innovations ✓ Road infrastructure countermeasures, e.g., rumble strips	~ $100m
Impaired	✓ Increase the number of IRSU officers by 100 FTEs (assign to distracted driving) ✓ Review current penalties to assess current effectiveness	~ $20m – $30m

** Note: Issuing speeding tickets at the 140 current locations to red light runners who exceed the speed limit by 10km/h or more is estimated to generate $7 million per year at 100% activation. (Source: ICBC)*

Section 8.1 of this report sets out these road safety initiatives in more detail, including a potential sequencing for implementation. They can be implemented in full for a higher impact on claim costs, or as a partial set, recognizing that the latter will require greater contribution from product reform and other initiatives to address the overall rate gap and trend.

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Opportunity #2: Successful re-design of the insurance product will help change claimant behaviour and assist in keeping premiums under control

Along with *affordability*, the core guiding principles of *efficiency*, *sustainability*, *fairness* and *simplicity* were identified as an appropriate framework to underpin discussion on potential solution options to these structural issues. Consideration of these guiding principles led to a range of options for ICBC and the BC government's review.

Four key objectives supported by a range of solution options for government consideration are summarized below. These have been informed by a global jurisdictional review that considered the continuum of different insurance models in place in a number of Canadian and global jurisdictions, and the successes and lessons learned from the various schemes and their reform efforts over the years.

These options are represented across a **continuum of different types of insurance models**.

At the far left side of the continuum sit litigation- or adversarial-based models like the current system in BC. Claimant benefits are typically received through cash settlements via negotiations on a case-by-case basis. It can take many years until claims are settled as the matter winds its way through the court process. During this time, both sides attempt to build their respective cases — the focus by the claimant tends to be on maximizing the award as opposed to the effectiveness of treatment. There are no caps on benefits awarded by the courts. First-party accident benefits are typically low, leaving at-fault drivers with only these limited benefits to access.

Moving from this adversarial end of the continuum towards the centre (featuring hybrid models), one finds caps on certain benefits, such as pain and suffering, may be introduced to help control costs and ensure premiums remain affordable. These caps typically only apply to minor injuries, meaning seriously and catastrophically injured claimants are unaffected. Other changes that hybrid models may incorporate are to limit the benefits that can be accessed via lump sums, instead focusing payments on medical treatments and care.

From this intermediate step to the far right, comprehensive care models shift the focus completely from cash awards to care and treatment for injured claimants. Richer accident benefits are available allowing both at-fault and not-at-fault drivers to obtain care, providing them the best opportunity to return to their pre-accident condition. Benefits are available immediately after the accident, as required, enabling faster return to function. Negligent at-fault drivers (e.g., excessive speed, impairment or distraction) may only be able to access limited benefits. The burden on the provincial court system would be significantly reduced, freeing up those resources for more strategic uses. This model is still based on fault as unsafe drivers will pay more for their insurance while safer drivers will see significant reductions.

In addition to considering where on the continuum the reformed product should lie, a re-design of the product allows the opportunity to address other issues. ICBC accident benefits, including the maximum dollar caps for most medical and rehabilitation services, have not been increased since 1991 as the system could not afford it. Given inflation increases since that time, claimants are increasingly paying out of pocket for such services due to the inadequate level of accident benefits. For claimants who cannot access cash compensation from the litigation model, (e.g. at-fault drivers), these benefits do not adequately cover losses incurred by injured parties. Product reform provides an opportunity to address this issue in addition to solving for the financial problems facing ICBC. Applying restrictions to problematic cost areas would allow for some of those savings to be redistributed as more modern and adequate accident benefits, improving the fairness of the system. In Alberta, the constitutional challenge on minor injury benefit restrictions was overcome when assessed in light of the entire minor injury legislative scheme. Increased medical benefits under the new legislation were felt to outweigh any benefits removed for pain and suffering. The lesson from this is that the whole suite of benefits is important under product reform, and consideration has been given to this in the design of potential options.

Each option, described in more detail on the following pages and the body of the report, describes the product design changes that could be applied to the current BC product to achieve specified savings under each of four objectives. These options alternatively can achieve a reduction to the current rate gap, contain future increases in premium levels to 2% per year, freeze premiums for the next five years, or allow for an overall significant reduction in premium levels within the next two years.

The product designs below each illustrate one possible way that the required savings could be delivered. Under each objective, consideration could be given to alternate product designs that could also achieve the targeted premium savings, and these variations are documented in the body of the report. Choice in terms of being able to increase accident benefits or restore tort options through optional coverage would also be made available to customers, although experience in jurisdictions such as Saskatchewan shows that few people select these options.

The expected outcome of each product design option is also compared to the current model in BC, which without change will see the Basic rate gap grow to $1.1 billion in 2019 or require average vehicle premiums of $1,970 in order to prevent further financial losses by ICBC.

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Current state BC model			

Key structural highlights of today's BC model:
• No limits on pain and suffering awards; minor injury costs greater than serious and catastrophic
• Accident benefits[10]:
  ○ Weekly wage benefit – $300
  ○ Medical payments limit – $150k
  ○ Funeral benefit limit – $2,500
• System viewed as being quite inefficient — only 58% of premium dollars returned to policy holders through claimant benefits
• High costs and long wait times to reach results (on average over three years); process is focused on cash settlements rather than claimant's care
  ○ Basic rate gap and trend gap of $785m
		Estimated rate gap and average premium by 2019:	

		Basic rate gap and trend gap of $785m today, estimated to grow to $1.1b without significant change	**Vehicle premium will be** **$1,970 by 2019 to eliminate rate gap**
Summary of key claim costs and expenses of BC's current state model:			
Minor injury costs **$718m**	**Non-minor injury costs** **$612m**	**Accident benefits** **$199m**	**Legal costs (ICBC & plaintiff)** **$845m**

[10] Accident benefit limits have not been increased since 1991. We note that the Consumers Price Index (CPI) has increased in excess of 50% since that time. This negatively impacts the seriously injured that are unable to advance a claim against another person for their loss (e.g., at-fault drivers).

Chart 9: Four options represented across a continuum of different types of insurance models

- Estimated overall claims savings range from $770m to $1.43b per year.
- Re-design of the current scheme shows that annual vehicle premiums could be reduced by as much as $630 per year from projected 2019 levels (a 32% reduction) or by 14% from today's rates[11].

Review Services Objective

1. Reduce $785M Basic rate & trend gap	2. Premium increases in line with 2% inflation (over 5 years)	3. Freeze premium increases (over 5 years)	4. Reduce Basic premium
Possible design measures: • $7K-$9K cap on pain and suffering for minor injuries • Double accident benefits: Weekly wage benefit - $600 Medical payments limit - $300K	Possible design measures: • $5K-$7K cap on pain and suffering for minor injuries • Triple accident benefits: Weekly wage benefit - $900 Medical payments limit - $450K • Stronger rules and regulations for litigated claim process; introduce independent dispute resolution system	Possible design measures: • $4K-$6K cap on pain and suffering for minor injuries • 4X increase to accident benefits: Weekly wage benefit - $1,200 Medical payments limit - $600K • Stronger rules and regulations for litigated claim process; introduce independent dispute resolution system • Medical and rehab costs payable only as accident benefits, no lump sums	Possible design measures: • Fundamental change to system from current adversarial nature to comprehensive care model: • Significantly enrich accident benefits, available to not-at-fault and at-fault without going through litigation process • No benefits for pain and suffering • Right to sue available only in instances of criminal negligence
• Scheme designs in Alberta and New Brunswick have similar claim costs	• Scheme designs in Queensland (Australia) and New South Wales (Australia) (pre-reform) have similar claim costs	• Scheme designs in Victoria (Australia) and New South Wales (post-reform) have similar claim costs	• Scheme designs in Manitoba, Saskatchewan and New Zealand have similar claim costs

Savings in Objectives 1, 2 and 3 achieved through progressively greater reductions in: number of minor injury claims, cost of general damages for minor injury claims, and legal costs and disbursements.

Savings	Premium	
$770M	$1,590	$380 reduction
$840M	$1,510	$460 reduction
$875M	$1,470	$500 reduction
$1.43B	$1,340	$630 reduction

Litigation-based — Hybrid model — Comprehensive Care model

Focus on care, not cash; Quicker settlements & greater % benefits returned to claimant.

Greater litigation, costs and premiums; Greater uncertainty.

[11] Combined average premium for Basic and Optional is **$1,550** for rates in 2017.

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Objective 1: Reduce the $785m gap between Basic rate premiums collected and amounts paid out in claim costs. (Rate increases in excess of 2% inflation are likely in following years.)			

Key structural changes to achieve savings:
• $7k–$9k cap on pain and suffering settlements for minor injuries
• Double current weekly accident benefits allowance
  ○ Weekly wage benefit – $600
  ○ Medical payments limit – $300K
	Estimated savings and average premium by 2019:		

	System savings $770m	Vehicle premium $1,590 $380 less than current forecast (and $40 or 2.5% more than today)	
Key outcomes compared with current state: • Improved balance between payments for minor injuries and non-minor injuries			
Minor injury litigation claim costs ↓ 70%	Non-minor injury litigation claim costs ↔ No change	Accident benefits ↑ 38%	Legal costs (ICBC and plaintiff) ↓ 30%
Similar system designs in Alberta and New Brunswick			

Objective 2: Reduce Basic premium increases to be in line with 2% rate of inflation for five years.			

Key structural changes to achieve savings:
• $5k–$7k cap on pain and suffering settlements for minor injuries
• Triple current weekly accident benefits allowance
  ○ Weekly wage benefit – $900
  ○ Medical payments limit – $450K
  ○ Stronger rules and regulations for litigated claim process; introduce independent dispute resolution system to decrease reliance on courts
	Estimated savings and average premium by 2019:		

	System savings $840m	Vehicle premium $1,510 $460 less than current forecast (and $40 or 2.5% less than today)	
Key outcomes compared with current state: • Further improvement to balance between payments for minor injuries and non-minor injuries			
Minor injury litigation claim costs ↓ 84%	Non-minor injury litigation claim costs ↔ No change	Accident benefits ↑ 75%	Legal costs (ICBC and plaintiff) ↓ 35%
Similar system designs in New South Wales and Queensland (Australia)			

Objective 3: Freeze Basic premium increases for five years.			

Key structural changes to achieve savings:
• $4k–$6k cap on pain and suffering settlements for minor injuries
• 4x current weekly accident benefits allowance
  ○ Weekly wage benefit – $900
  ○ Medical payments limit – $450k
• Stronger rules and regulations for litigated claim process; introduce independent dispute resolution system to decrease reliance on courts
  ○ Medical and rehab costs payable only as accident benefits, no lump sums
	Estimated savings and average premium by 2019:		

	System savings $875m	**Vehicle premium** $1,470 $500 less than current forecast (and $80, or 5%, less than today)	
Key outcomes compared with current state: • Focus begins to shift to claimant care and treatment rather than cash settlement			
Minor injury litigation claim costs ↓ 93%	**Non-minor injury litigation claim costs** ↔ No change	**Accident benefits** ↑ 126%	**Legal costs (ICBC and plaintiff)** ↓ 40%
Similar system design to reformed New South Wales scheme and Victoria (Australia)			

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Objective 4: Reduce Basic premiums.		
Key structural changes to achieve savings: • Fundamental change to system from current adversarial nature to comprehensive care model: ○ Significantly enrich accident benefits, available to not-at-fault and at-fault without going through litigation process ○ No benefits for pain and suffering ○ Right to sue available only in instances of criminal negligence	**Estimated savings and average premium by 2019:**	
	System savings $1.43b	**Vehicle premium** $1,340 $630 less than current forecast (and $210, or 13.5%, less than today)

Key outcomes compared with current state:

- Focus shifts to claimants' care and treatment, available to claimants sooner for more effective results
- Savings achieved through substantial reduction in number of claims, costs of pain and suffering being removed from system, and significant reduction to legal costs and disbursements.
- Frees up the court system for other more strategic uses
- System remains fault-based as premium costs will be driven by driver actions

Minor injury litigation claim costs	Non-minor injury litigation claim costs	Accident benefits	Legal costs (ICBC and plaintiff)
↓ 90+%	↓ 90+%	↑ 490+%	↓ 90+%

Similar system designs in Manitoba, Saskatchewan and New Zealand

It should be noted that all the above product options will also result in a reduction in the premium for the bodily injury component of the Optional product. The reduction in premium will increase from option 1 to option 4 having the biggest reduction. We have not estimated the possible reduction in premium for the Optional product.

Policy considerations

Having analyzed the current BC scheme performance against the government's review objectives, this report sets out some of the policy issues that need to be considered in light of potential options for reform. Key policy considerations would include affordability of premiums, the best way to provide effective medical treatments to allow faster return to function, insurance model (litigation-based or care-based), amount of payments to minor injuries versus non-minor, impact on the court system, system abuse and fraud, and the need for a modern auto insurance system to anticipate and respond to the rapidly changing landscape brought about by the emergence of autonomous cars, ride sharing, etc.

Product choice

With specific reference to the product changes discussed above, an option that could be considered is to allow policyholders to purchase optional "top-up" coverage to replace the reduction in litigated claim benefits in all options. Similar provisions exist in other schemes in Canada (Saskatchewan) and in the US. The details of the design would need to be considered and various optional features explored. The "top-up" coverage will depend on the product design, and could be offered as part of ICBC's Optional product and could be open to competition.

Enhancements to road safety and product reform must be undertaken in order to materially impact claims costs and assist with achieving financial sustainability without requiring significant premium increases. However, these changes are not quick fixes — they will require thoughtful design and consultation with many critical stakeholders as well as legislative changes. The financial benefits would not be realized until implementation is complete in 18–24 months. In the meantime, we recommend that ICBC initiate a number of other interim measures that will have an incremental impact to the future performance of insurance and lay a platform to enable successful reform. See Opportunity 3 below.

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Opportunity #3: Interim measures that will have an incremental impact to the future performance of insurance and lay a platform to enable successful reform

Over the years and with particular focus since 2012, ICBC has either completed, or is in the process of delivering against, a number of initiatives to reduce costs borne by the Basic insurance scheme. With direction from the Ministry of Transportation and Infrastructure, as well as ICBC board and management, costs have been reduced from a wide range of operational, staffing and technology initiatives across the organization and its partners. Such initiatives include reductions in management costs and operating budgets, significant productivity gains in claims management and handling initiatives, a quality assurance and fraud mitigation program.

The cost of material damage has been increasing due in part to foreign exchange pressures, as well as labour rate increases. The Provincial Government enacted an Order-in-Council in 2016 to facilitate a High-Value Vehicle pricing, which doubles the Basic rate for high-value vehicles to better reflect the true risk of repair costs[12].

In any other operating environment, the level of work completed and savings achieved (over $100m) would have been considered a significant management success. However, the growing premium rate gap caused by the recent increases in accident and claims trends in BC has readily consumed those savings and at the same time highlighted a much bigger series of cost pressures that internal productivity and efficiency gains cannot and will not address.

Nevertheless, there are a number of outstanding initiatives that have been identified that are still to be implemented. It is estimated that these interim measures could deliver in excess of $150 million in savings within a one-to-two-year period, which on their own will not achieve the objective of affordable insurance with low annual rate increases, but they are important and prudent steps to minimize ICBC losses in the short term. Some of these key initiatives are described below.

Driver risk premiums: Higher-risk drivers should pay for their choices and behaviours

ICBC's current insurance model does not adequately price driver behaviour and choices, undermining the principle of fairness. ICBC has not incorporated any significant Basic rate design changes since 2007, and as a result, a driver's individual Basic premium no longer reflects the risk and cost imposed on the Basic insurance system. The current system faces a number of challenges with regards to designing rates to reflect risk — including working with an outdated, inefficient rating framework, cumbersome regulatory oversight, as well as legislative restrictions.

ICBC has invested in significant system reform over the past five years with the replacement of its claims, insurance, and rating engine technology platforms, which provide the enabling infrastructure necessary to support rating reform. Fundamental changes to ICBC's rating scheme — targeted at increasing fairness in Basic rates, while also mitigating Basic cost pressures — will help reduce pressure on Basic insurance by promoting a cultural shift toward safer driving, increasing the portion of

[12] We believe that there is an opportunity to even take this a step further through the introduction of a High-Value Vehicle sliding scale pricing model to better recognize differing vehicle values over $150,000.

premium revenues paid by high-risk drivers (including appropriately pricing premiums for those that choose to drive high-value luxury vehicles) and reducing claims costs.

Public consultation in 2012 (Basic Vehicle Insurance Rating System Consultation and Engagement) has informed a number of preferred strategies to better set premiums for Basic vehicle insurance coverage. Customers have told ICBC they think the system would be fairer if lower-risk drivers paid less for their vehicle insurance and higher-risk drivers paid more. Regardless of the current or future choice of product structure, ICBC needs to change its pricing and risk model to clearly identify and penalize higher-risk drivers and conversely improve the reward system for those who drive safely. ICBC has committed to its regulator, BC Utilities Commission, to move to a system that better recognizes driving records. It is estimated that a modernized pricing and risk model could generate up to $80m in incremental revenue per year. We recommend that detailed design on fair pricing and a modernized risk model commence immediately. Other initiatives are discussed later in the report.

Improved governance and clarity on accountability and funding will yield greater results

Resources and capabilities: key elements for road safety success

In BC, road safety initiatives are defined, regulated and operated through a number of partner organizations and relevant laws. RoadSafetyBC (a branch within the Ministry of Public Safety and Solicitor General and overseen by the Superintendent of Motor Vehicles) develops road laws and policies to make roads safer. The Ministry of Transportation and Infrastructure is responsible for setting safe speeds and for safe road infrastructure on highways (as are municipalities on local roads). Police deliver road safety enforcement. ICBC is one of the key road safety agencies in BC, with a legislated mandate of promoting traffic safety, education and awareness, as well as programs that can reduce crashes and claims costs.

ICBC has had a significant role in introducing, supporting and funding new road safety and driver and vehicle licensing priorities since its inception in 1973. Notably, in 1996 and1997, the BC government merged the Motor Vehicle Branch into the ICBC organization to allow greater promotion and improvement of highway safety under a single administrative umbrella, leveraging the infrastructure and resources available within ICBC. Similar to today's environment, at the time BC was experiencing an increase in both accident and fatality rates, and the merger served to align road safety funding to activities that deliver quantifiable improvements in terms of reduced accidents, death and injuries on BC roads.

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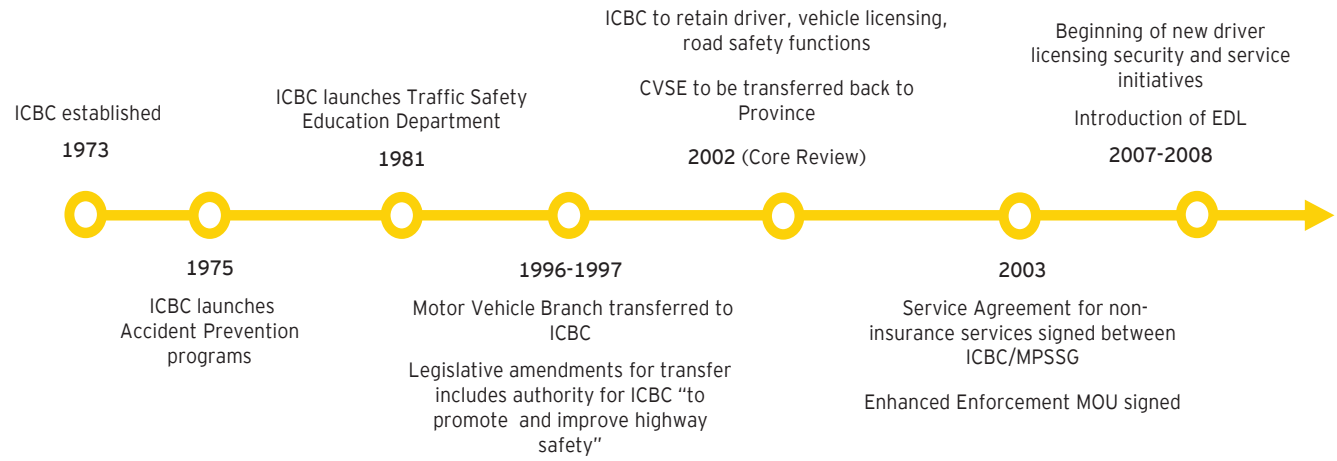
Chart 10: Sample ICBC road safety initiatives since 1973 inception



The findings from a 2002 Core Review identified that the integration of driver licensing and vehicle licensing and registration activities, as well as road safety programs, had significant public policy benefits including cost savings due to economies of scale and supporting BC's low rate of uninsured drivers (one of the lowest in North America).

Roll forward to present day and the urgency to address the increasing crash and claim costs trends. This report recognizes the important roles of RoadSafetyBC and others in setting out and executing on BC's vision to have the safest roads in North America by 2020. What is not clear is the leadership mandate and most effective alignment of resources (including funding) to initiatives that will have the most impact on BC's system. In the context of a system-wide review in BC of opportunities to reduce the increasing crash rate in BC, now is an opportune time to take a close look at the accountability, measurement and funding models in place today.

Funding

In 2016, ICBC spent over $175 million delivering on agreed road safety responsibilities as set out under the Service Agreement with the Province of BC, and other non-insurance initiatives, including:

- $70 million on the administration of Driver Licensing and Testing services;
- $40 million on road safety initiatives, including Vehicle Registration & Licensing and Driver Training School Certification and Regulation; and
- $22 million for the Police Services Division responsible for the oversight for the Enhanced Traffic Enforcement Program.

This $175 million was funded through Basic insurance premiums, at an annual cost of approximately $50 per vehicle. This spending generated $577 million in revenues and fines in 2016, which were transferred in full to the Province (and then in part shared across BC's municipalities). None of those revenues were allocated back to Basic insurance, although many of these initiatives mitigate claims cost pressures by reducing the frequency and severity of crashes.

Going forward, with the potential for increased income from new and additional road safety and non-insurance initiatives (over $250m annually), it is recommended that the option of having ICBC retain at least a portion of additional revenues generated by such initiatives (i.e., intersection cameras) be considered. The additional revenues would help reduce pressure on Basic insurance premiums.

Regulatory oversight

ICBC is currently regulated by the BC Utilities Commission. The current system is based on a utility model that was not designed initially for regulating auto insurance. The future requirements of the organization will require a less expensive and less bureaucratic approach to competitive pricing with an enhanced ability to respond to customer requirements and changing market conditions.

Product Options 2 and 3 above will also require an independent body to regulate the modified litigation and alternate dispute processes, and Option 4 will require an independent body for assessing claimant disputes. Alternate regulation and governance models exist internationally for similar functions that can be considered for possible adoption here in BC.

Operational efficiency

EY conducted a high-level review of ICBC's current state claim operation and evaluated progress against recommendations from previous reviews over the past few years. ICBC has made significant progress and has implemented numerous initiatives aimed at reducing costs associated with claims handling, while also focusing on increased customer satisfaction. Included in these initiatives is ICBC's Operational Excellence program, which is intended to streamline claims operations.

Absent any product reform, two claims initiatives that are currently underway have the potential to achieve additional claim cost savings: successful implementation of leading Quality Assurance and Fraud Mitigation programs will generate approximately $30–$60 million in annual savings (between 1% and 2% of annual claim costs). We encourage the full implementation of these programs.

Further, ICBC undertook a review of its procurement activities and identified a number of strategic sourcing initiatives to reduce the cost of auto repair, as well as medical assessments and reports. Only a subset of these initiatives are currently approved for implementation. We would encourage the full suite of strategic sourcing initiatives be undertaken, which would provide an opportunity for ICBC to save over $150 million over the next five years by reducing the amount paid for goods and services.

Non-insurance revenue opportunities

There may be further opportunities to reduce costs or free up revenue through further examination of non-insurance services. For example, we would encourage the progression of analysis related to the viability and fit of services such as salvage operations. ICBC has significant real estate holdings, which may also represent potential unrealized value. Other jurisdictions have moved more assertively into the auction and sale of specialized license plates (vanity plates). Again, while these individual measure will not solve ICBC's fundamental financial issues, they may represent worthwhile opportunities for the corporation.

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2.4 Implementation plan

The reform of BC's auto insurance system is not going to happen overnight, and a considered and measured approach is required. We recommend structuring the reform efforts in several parallel streams: those that require stakeholder consultation and the development of new policy and legislation (including road safety and product reform), and those interim measures that can be undertaken immediately to minimize ongoing losses and set the foundation for successful reform.

Experience shows there are a number of critical success factors that should underpin the reform approach and its implementation:

- Robust and inclusive stakeholder consultation results in better policy development and ultimately a stronger legislative framework. It is also critical for gaining support for the case for change. Key stakeholders include various levels of government; motorists and the general public; medical, allied health and legal professions; and other stakeholder representative groups;
- The program must be managed as an integrated portfolio. Given the many dependencies between the streams, the reforms must be seen as a total package; otherwise, unforeseen undesirable consequences are more likely to emerge;
- Investment in change management is essential — the impact on the system and supporting people and organizations (ICBC, brokers and lawyers, medical profession and other key stakeholders) and the nature of work they undertake cannot be underestimated;
- Progress and outcomes must be carefully monitored and value should be delivered throughout the implementation time frame;
- Dedicated and clear leadership and accountability, and bringing the right talent to the table, is critical — this includes strong governance;
- Momentum is important — reform needs to proceed at pace; and
- Reform is not a one-time effort — the overall system will require ongoing maintenance and must be designed to evolve over time.

Chart 11 describes an illustrative and high-level implementation approach, designed to deliver the reform outcomes within two years through a series of immediate initiatives and those that require ongoing and longer-term consultation and development. There would also be ongoing efforts of refinement and incremental improvement activities that would continue into the future. The key streams of activities are summarized as follows:

1. Policy and Legislative Framework Development;
2. Road Safety;
3. Product Reform; and
4. Interim Measures.

The entire implementation program would need to be supported by a strong governance model, clear accountabilities, program and risk management, and strategic stakeholder consultations.

This implementation plan is discussed in greater detail in Section 9 of this report.

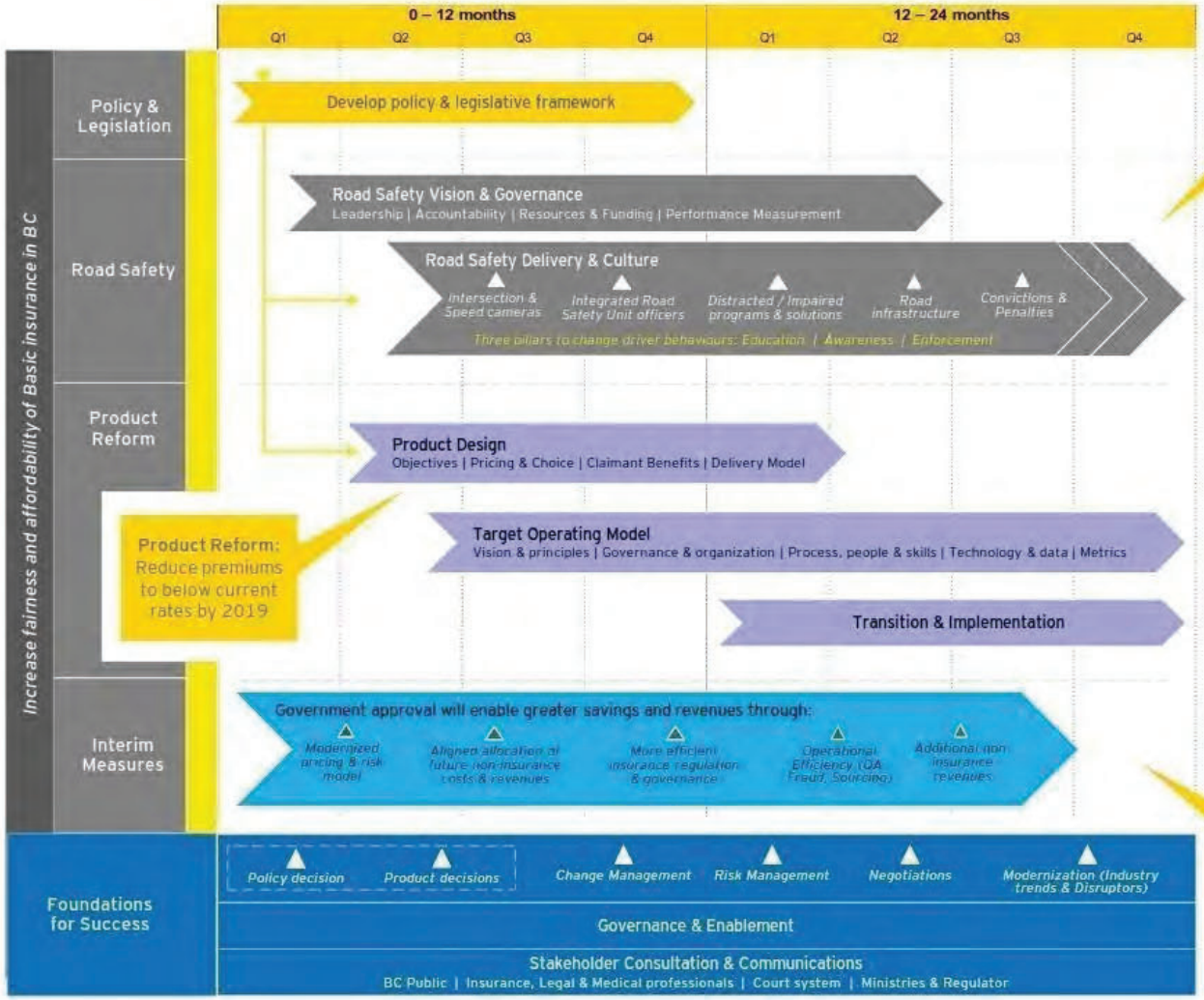
Chart 11: Illustrative High-level Implementation Plan

The need for change

Without significant and rapid change, the average BC driver may pay almost $2,000 annual total premium for auto insurance by 2019, an increase of 30% over today's rates

The key issues driving BC towards significantly higher insurance premiums:

- More accidents on BC's roads are resulting in more claims
- The number of claims being filed is going up faster than the number of accidents
- Average settlements for minor injuries (such as minor soft-tissue) are increasing
- Claim costs for minor injuries have increased from 30% to almost 60% of total bodily injury claims costs since 2000
- Insurance premiums collected by ICBC do not cover claim costs



Key outcomes of reform:

- Fewer accidents on BC's roads
- Fewer minor bodily injury claims
- Reduced claim costs for minor injury (pain and suffering)
- Significant reduction to legal costs and disbursements
- Greater accident benefits and shift from cash to care; treatment available to claimants sooner
- Premiums more affordable and sustainable in the long-term

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3. Auto insurance in BC and the role of ICBC

3.1 Auto insurance in BC

ICBC is a provincial Crown corporation created in 1973 to provide universal public auto insurance to drivers in BC through a government owned and operated system. Any vehicle registered for driving in British Columbia must, by law, be covered by ICBC's Basic insurance package (called "Basic Autoplan"), which includes protection from third-party legal liability, under-insured motorist protection, accident benefits, hit-and-run protection and inverse liability (coverage in parts of Canada or the US where local laws can affect a claim). ICBC is the sole provider of this mandatory Basic insurance in BC.

Drivers also have the ability to buy optional insurance for additional coverage such as extended liability, collision and comprehensive plans. Optional insurance can be purchased from ICBC ("Autoplan Optional") or from a number of private insurance firms.

Table 2: ICBC Basic Autoplan Insurance

Coverage	Description
Third Party Liability – Protection if you're responsible for a crash	Coverage for when a driver is at fault in a crash and another motorist makes a claim against them. Basic Autoplan covers up to $200,000 of claimant's injury costs and vehicle damage ($1,000,000 coverage for commercial vehicles).
Autoplan Accident Benefits – Medical costs, wage loss and more (see table below for more on Accident Benefits)	Accident Benefits provide wage loss benefits and up to $150,000 in medical and rehabilitation costs to drivers, passengers and members of an insured's household if injured in a motor vehicle crash, even if the driver is at fault.
Underinsured Motorist Protection – If the other driver doesn't have enough insurance	Provides coverage where the person who's responsible for a crash doesn't have enough insurance to pay for a claim.
Hit-and-run damage and injuries	Available to every BC resident, even if they don't own or insure a vehicle. Up to $200,000 is available to anyone whose property is damaged, or who is injured or killed in a crash on a roadway in BC.
Inverse liability protection – Protection where local laws can affect your claim	Coverage in parts of Canada or the US where local laws don't allow a claim against the person who caused a crash. Vehicle repair costs are covered up to 100%.

Table 3: ICBC Accident Benefits

Accident Benefits	Purpose	Limit
Medical and Rehabilitation	Provide reimbursement for reasonable and necessary expenses for medical and rehabilitation services	$150,000 overall cap on total amount payable by ICBC. Max cap on individual services
Wage Loss	Available to an employed person who is unable to work because of a total disability caused by a motor vehicle crash	75% of injured person's average gross weekly earnings, up to $300 per week. Wage loss payments from other disability benefit sources such as work/private insurance plans or employment insurance (EI) are deducted from the benefits payable under Basic Autoplan, i.e., ICBC is the second payer
Funeral	Provide reimbursement for burial and funeral expenses if an insured person is killed in a motor vehicle crash	$2,500
Death	Payable to the deceased's spouse and/or dependents	Benefit levels vary according to the position of the deceased in the household (head of household, spouse/partner, child, other)

These accident benefits include most medical and rehabilitation services (physiotherapy, massage therapy, etc.)

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3.2 Role and mandate of ICBC

As a public insurer, ICBC has a responsibility to keep Basic automobile insurance prices consistently affordable for British Columbians. Rates are approved through a rate filing process governed by the BC Utilities Commission. Uniquely, ICBC's role and value in BC has expanded over the years to support the government with some of its non-insurance requirements through funding and delivering additional functions, such as new road safety programs, vehicle registration and licensing initiatives, driver testing and licensing, fine collection and the BC Services Card initiative. These services originally fell outside of ICBC's core mandate, but various governments have asked the organization to perform these services and to bear the associated costs within Basic insurance rates.

Currently, there are four public auto insurance schemes in Canada: ICBC, Saskatchewan Government Insurance (SGI), Manitoba Public Insurance (MPI), and Société de l'assurance automobile du Québec (SAAQ). Ontario, Alberta and the Atlantic provinces run private insurance systems. The role of public insurers as compared to a privatized system can be summarized as follows:

- **Stable and affordable premiums:** Auto insurance costs are a significant household cost. The primary value of a public insurer is to provide stable and affordable premiums for provincial residents for a considerable time period.
- **Different risk assessments:** Like any insurer, ICBC matches insurance costs to driver and vehicle risk. However, unique to a public insurer, ICBC assesses drivers based on driving and claims history, in comparison to private insurers whose risk assessment methodology considers demographic (e.g., age) and geographic factors (e.g., home address), which gives rise to potential discriminatory premium assessments. Under a privatized system, certain driver groups, such as young males, will incur significantly higher premiums in comparison to public insurers.
- **Additional service offerings:** Public insurers have the ability to provide additional services such as handling driver license and vehicle registrations, road safety implementation and collecting driving fines. These are services that were originally outside their mandates but were transitioned to enhance public policy benefits including cost savings due to economies of scale and maintaining low rates of uninsured drivers.
- **Job creation:** Public insurers provide a significant number of jobs in their provinces. ICBC, for example, has approximately 5,000 employees and partners with a significant network of insurance brokers and auto body shops in British Columbia.

4. What does an effective auto insurance system look like for BC?

BC's public auto insurance system has been in place since 1973; for the most part, it has delivered a stable and affordable product to the citizens of BC. However, recent increases in the number of crashes and significantly increased claims costs have highlighted some very real concerns over its future affordability and financial sustainability, driven by some fundamental structural problems leading to overall claim costs and expenses becoming greater than current insurance premiums collected. Various public consultations have also demonstrated interest in a system that is considered to be fairer, whereby lower-risk drivers pay less for vehicle insurance and higher-risk drivers pay more.

This Review is intended to provide options for ICBC and the government's consideration that would avoid significant increases to Basic rates, while ensuring fair and reasonable benefit coverage. As such, it is necessary to consider a set of guiding principles to underpin an effective BC auto insurance model. In this way, we can begin to develop reform options that are tailored to meeting these principles and identify metrics to measure the performance of the current and future model options. Based on the goals of this Review and analysis of similar frameworks in other jurisdictions, the following guiding principles were identified as an appropriate framework to underpin discussion on potential solution options.

Table 4: Guiding principles

Guiding principles for BC auto insurance reform	Performance metrics
Affordability: The system should minimize the level of insurance premiums required from drivers; premiums should be reasonably affordable for the majority of drivers.	▸ Ability for BC citizens to afford Basic and Optional insurance products, by comparing average vehicle premiums to average wage levels.
Efficiency: The system should maximize the amount of premium dollars paid to claimants by minimizing the amount of premium dollars paid to administer and manage the system and to service providers (i.e., lawyers and insurers) in delivering benefits to claimants.	▸ Proportion of premiums paid to claimants. ▸ Payments received by claimants refer to loss of wages, medical, rehabilitation, care and pain and suffering payments, but exclude insurance and non-insurance operating expenses (e.g., ICBC expenses) and legal and related costs.

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Guiding principles for BC auto insurance reform	Performance metrics
Sustainability: Over the long term, future claims costs and expenses should be predictable and in line with inflation.	▸ Future claims costs are relatively predictable with reasonable certainty over the long term. ▸ Claims cost and premium increases over time are close to price inflation (i.e., Consumer Price Index). Schemes where costs increase significantly above price inflation eventually become unsustainable. ▸ If scheme costs are sustainable, the insurance entity will be financially viable over the long term, with appropriately strong financial results.
Fairness: There are four perspectives to fairness: 1. There is a finite premium pool available to pay people injured people in auto accidents (based on the principle of premiums remaining affordable). As a public policy, the proportion of claims costs paid to seriously injured claimants compared to minor injured claimants needs to be fair. 2. Lower-risk auto owners should pay less for their vehicle insurance, and higher-risk auto owners should pay more reflecting the difference in the cost of accidents depending on the owner's vehicle. 3. Accident Benefit limits in BC have not increased since 1991, meaning claimants are incurring more out-of-pocket expenses due to inflationary increases in the costs of treatment services. This is a fairness issue as some claimants will feel this impact more than others. 4. Premiums paid by drivers should cover the full cost of insurance without being subsidized by the taxpayer.	▸ Perspective A: One measure is the proportion of claims cost paid to minor injury claims as a percentage of total claims costs. Schemes where the proportion of total claims costs paid to minor claims exceeds around 40% or more are not considered to be as fair as schemes where the ratio is less than 40%. ▸ Perspective B: Premiums for a cohort of like auto owners with similar characteristics (e.g., age of vehicle) should reflect their underlying claims experience. Drivers with good claims experience should not be compensating drivers with poor claims experience. ▸ Perspective C: Accident benefits should be in line with the prevailing cost of treatment services.

Guiding principles for BC auto insurance reform	Performance metrics
***Simplicity*:** The claims process should be as simple as possible for claimants to navigate and the insurance product offering (Basic and Optional) should be easy for ICBC to maintain, and easily understood by brokers, customers and scheme providers such as medical practitioners.	▸ Claimant and vehicle owner satisfaction ▸ Number and cost of claims disputes ▸ Relatively short time frames to resolve a claim ▸ Stable claim costs over time

The above principles are not mutually exclusive and to some extent can be conflicting. For example, fairness in premium setting might result in some policyholders paying very high premiums reflecting their higher accident rates (e.g., young owners), which would be considered to be unaffordable for them. As a consequence, the application of these guiding principles requires a decision on which ones have a higher priority than others. In the example above, the current BC government has made a public policy decision that affordable premiums are a higher priority than "fair" premiums (this is also a common approach in Australia but not in the UK or US).

Consideration of these guiding principles led to developing a range of options for ICBC and the BC government's review. In line with the principle of simplicity, the model that achieves the government's objectives in the most straightforward way should be adopted.

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5. Jurisdictional comparison

5.1 Introduction

Trends observed in BC in terms of road accident numbers and rate pressures are not unique. Many other jurisdictions in Canada and around the world have experienced similar cost pressures at different periods. An objective of this independent review was to compare ICBC against other relevant jurisdictions across Canada and elsewhere in the areas of road safety, operational and financial performance, investment management, governance and product design. We have conducted a global jurisdictional scan with the purpose of reviewing trends, identifying common drivers of deteriorating claims costs, assessing opportunities and reviewing other useful metrics (e.g., affordability, efficiency and benefit mix) to guide our recommendations and options. Full details are contained in Appendix 1.

This section draws on the most relevant elements we have seen in particular jurisdictions that represent opportunities for reducing road accident rates and reforming the Basic insurance product.

5.2 Road safety

ICBC tracks and reports on the total number of crashes on BC roads annually. ICBC-reported data suggests that an approximate 20,000 additional crashes per year have been taking place in BC since 2013 (a 23% increase from 2013 to 2016). The following paragraphs below provide a comparison to other jurisdictions in Canada and internationally.

5.2.1 Accident rates

The table below shows BC accident rates compared with 22 other global jurisdictions, including Canadian provinces and territories, and selected states in the US and Australia. Accident rates are presented based on comparative ranking over the 2005–2014 average and based on 2014 results.

Of note is the following from a BC context:

- BC ranked 9th out of 22 jurisdictions on average accident rates over the 2005–2014 period.

From a global perspective, it is important to note:

- Australian states (Victoria, New South Wales and Queensland) ranked amongst the highest performing jurisdictions, and the US amongst the lowest.

Table 5: Summary of provincial and state accident rate comparisons (accidents per 100,000 people)

REGION	2005- 2014 AVERAGE	2005- 2014 RANK	2014	2014 RANK
BRITISH COLUMBIA	505	9	456	13
NEWFOUNDLAND	418	6	391	9
PRINCE EDWARD ISLAND	525	10	352	7
NOVA SCOTIA	564	12	412	10
NEW BRUNSWICK	448	7	354	8
QUEBEC	560	11	436	11
ONTARIO	476	8	347	6
MANITOBA	728	20	895	22
SASKATCHEWAN	649	18	516	15
ALBERTA	573	13	455	12
YUKON	603	14	484	14

REGION	2005- 2014 AVERAGE	2005- 2014 RANK	2014	2014 RANK
NORTHWEST	307	2	202	2
NUNAVUT	143	1	130	1
CALIFORNIA	624	17	590	17
MICHIGAN	618	15	727	20
MARYLAND	765	21	729	21
MINNESOTA	621	16	546	16
OREGON	712	19	618	18
WASHINGTON	774	22	658	19
NEW SOUTH WALES	395	4	331	4
VICTORIA	325	3	305	3
QUEENSLAND	417	5	344	5

In short, there exists a significant opportunity for BC to improve in comparison from both a Canadian perspective and global perspective.

5.2.2 Fatality rates

The table below shows BC fatality rates compared with 22 other global jurisdictions, including Canadian provinces and territories, and selected states in the US and Australia. Fatality rates are presented based on comparative ranking over the 2005–2014 average and based on 2014 results.

Of note is the following from a BC context:

- BC ranked 11th out of 22 jurisdictions on average fatality rates over the 2005–2014 period.

From a global perspective, it is important to note:

- Australian states (Victoria, New South Wales and Queensland) ranked amongst the highest performing jurisdictions, and the US amongst the lowest.

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Table 6: Summary of provincial and state fatality rate comparisons fatalities per 100,000 population

REGION	2005- 2014 AVERAGE	2005- 2014 RANK	2014	2014 RANK
BRITISH COLUMBIA	7.9	11	6.3	10
NEWFOUNDLAND	5.9	5	5.5	8
PRINCE EDWARD ISLAND	7.9	16	3.4	1
NOVA SCOTIA	8.7	12	5.8	9
NEW BRUNSWICK	11.0	19	7.7	14
QUEBEC	5.0	6	4.1	3
ONTARIO	3.1	1	3.5	2
MANITOBA	7.43	10	5.3	7
SASKATCHEWAN	16.4	21	11.6	22
ALBERTA	12.4	20	9	17
YUKON	14.6	22	10.8	20

REGION	2005- 2014 AVERAGE	2005- 2014 RANK	2014	2014 RANK
NORTHWEST	9.1	8	9.1	19
NUNAVUT	9.0	4	11.1	21
CALIFORNIA	9.9	14	8	15
MICHIGAN	11.4	17	8.8	16
MARYLAND	9.8	15	7.4	13
MINNESOTA	8.6	13	6.6	12
OREGON	11.7	18	9	17
WASHINGTON	7.8	9	6.5	11
NEW SOUTH WALES	4.4	3	4.1	3
VICTORIA	4.4	2	4.2	5
QUEENSLAND	5.8	7	4.7	6

Overall, within the context of the BC comparison (Canada, US, Australia) at 2014, BC ranked as 10th out of 22 states/provinces surveyed for road fatality rates. Comparatively, Ontario was placed 2nd.

5.2.3 Road safety initiatives that are delivering enhanced results

As described in Section 6.1 (Road safety current state assessment), the main factors affecting BC roads today are speed, impairment and distracted driving. The following related and leading road safety practices have been identified and compared with BC from our global jurisdiction scan. These are summarized below:

Table 7: Sample leading global road safety initiatives

	Road safety Initiative	BC context	Leading practice	Effectiveness
Speed	✓ Automated speed enforcement (intersection cameras)	140 ISC cameras	UK (2000–2004)	✓ **42%** reduction in deaths or seriously injured at camera sites ✓ **100** lives saved per year ✓ **4,230** fewer personal injury collisions
Speed	✓ Automated speed enforcement at high risk sites	Currently no automated "speed on green" technology	Victoria, Australia	✓ **26%** reduction in casualty crashes, minor injury crashes and fatal collisions ✓ **39** fewer minor injuries per year ✓ **17** lives saved per year
Speed	✓ Point to point systems	Not currently implemented	UK	✓ **36%** reduction in fatal and serious collisions ✓ **16%** reduction in personal injury collisions
Distracted	✓ Road infrastructure countermeasures, e.g., rumble strips	Not currently implemented	US	✓ **50%** reduction in single vehicle run off road injury crashes ✓ **91%** reduction in crashes on urban two-lane roads
Impaired	✓ Increase in enforcement	140 FT IRSU officers	New Zealand (2010–2011)	✓ **40%** decrease in road deaths (**52** lives saved)

The above effectiveness scan has been considered in making the following reform recommendations outlined in Section 8.2 of this report.

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5.3 Insurance model

5.3.1 Introduction

Almost every province in Canada, with the exception of BC, has taken deliberate action in recent decades to mitigate pressures on insurance premium rates by moving away from unrestricted litigation-based insurance systems. Internationally it is a similar story, with reform activity on personal injury schemes in the UK, Europe, Australia and the US over the past few decades in the face of rising claim costs, affordability concerns and consumer backlash. There is much BC can learn from the experience of these jurisdictions in developing a robust product solution that best meets the needs of British Columbians.

5.3.2 Experience of other Canadian provinces

There is a mixture of both private and public auto insurers across Canada, and several different insurance models in place. The province of BC has a litigation-based insurance model, which allows not-at-fault drivers and passengers to sue at-fault drivers for both economic loss and pain and suffering. BC, Alberta and the Atlantic provinces are the only provinces in the country that still have this adversarial model (and BC is the only province still operating with an unrestricted model). The care-based model, as in place in Manitoba and Saskatchewan, provides comprehensive benefits for those injured in accidents, and the right to sue for excess economic loss and pain and suffering is allowed only in limited circumstances. Certain hybrid models (designed to bring benefits from both models) typically use financial or verbal thresholds to determine the right to sue.

Every Canadian jurisdiction that has moved away from unrestricted litigation-based models has done so in an effort to control escalating minor bodily injury costs. Affordability issues and consumer backlash forced the other provinces to undertake major reforms to their insurance products. The scene being set in BC is no different — claims costs are escalating beyond the point that can be managed by rate-smoothing mechanisms, and assuming this trend continues, BC consumers will be experiencing a dramatic rise in rates, provoking a backlash.

Table 8: Insurance reforms by Canadian jurisdiction

Province	Model	Year	Pre-reform	Post-reform
Alberta	Private	2004	Unrestricted litigation-based model	Cap on pain & suffering for minor injuries
Saskatchewan	Public	2003		Hybrid[13]: mix of litigation and care-based
Manitoba	Public	1993		Pure care-based
Ontario	Private	1990		Hybrid: Threshold care-based
New Brunswick	Private	2003		Cap on pain & suffering for minor injuries
Nova Scotia	Private	2003		Cap on pain & suffering for minor injuries
Quebec	Public/private	1978		Pure care-based
Newfoundland	Private	2004		Deductible on pain & suffering for minor injuries
British Columbia	Public	n/a		n/a

Product reform has been largely effective across Canada, and the universal result has been a reduction in claims costs and, subsequently, insurance rates.

Two provinces in particular from which BC can learn are as follows:

- Alberta introduced a cap on pain and suffering for minor injuries in 2004[14]. This restriction was challenged as a constitutional violation in Morrow v. Zhang. In 2009, the Alberta Court of Appeal ruled in favour of the province, overturning a lower court decision and concluding that the minor injury cap held up to constitutional scrutiny when assessed in light of the entire minor injury legislative scheme. The ruling was based on the fact that increased medical benefits are available to claimants under the new legislation and that these benefits outweigh the damages for pain and suffering. Any proposed product reforms in BC would be well-advised to consider this ruling and consider the whole package of reforms to ensure the legislation meets the needs and circumstances of claimants without discrimination.
- Ontario has one of the least effective insurance systems in Canada. It is filled with disputes and inefficiencies, and a very high percentage of premiums is going to experts and lawyers rather than directly to claimants. The Marshall report ("Fair Benefits Fairly Delivered", April 2017) contains many useful learnings for BC in terms of opportunities for creating a better and more efficient system.

[13] Saskatchewan operates a choice model where residents can elect to participate in the litigation-based model instead of the care-based model. The vast majority of insureds (approximately 98%) remain in the care-based system.
[14] The Alberta government is currently conducting a targeted stakeholder consultation to inform potential changes to their auto insurance system.

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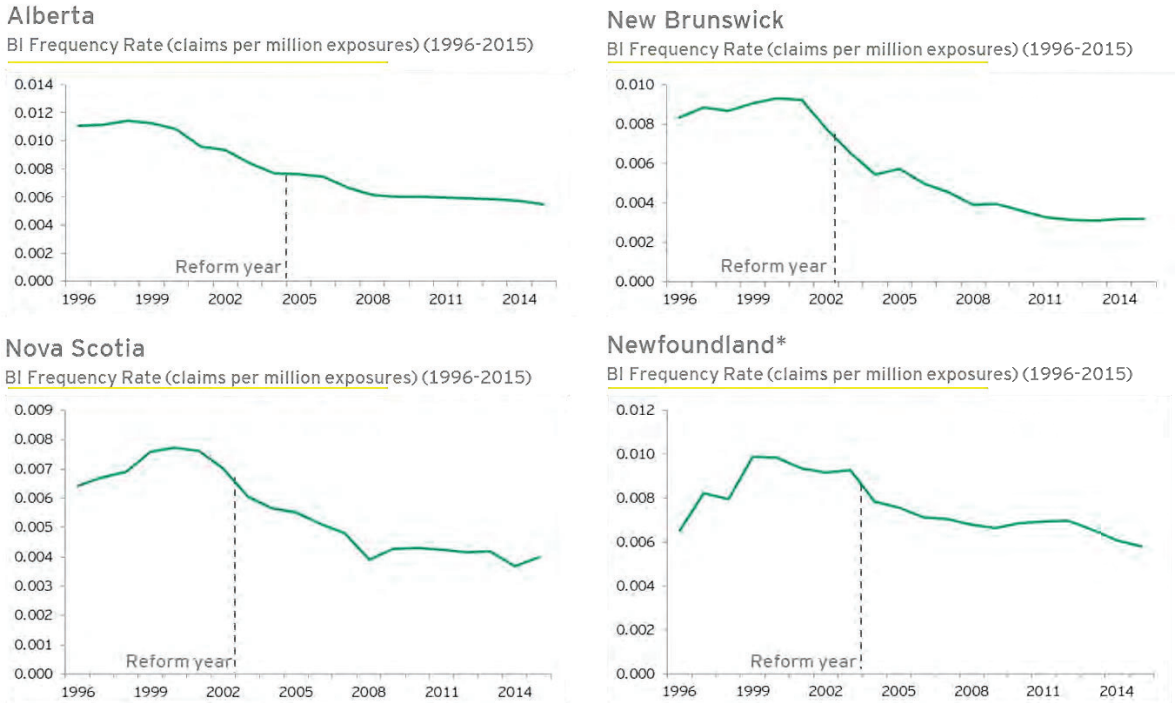
5.3.2.1 Pain and suffering awards for minor injury claims

Product reforms in other Canadian provinces addressed similar cost drivers to what we are seeing in BC today — in particular, escalating costs for pain and suffering for minor injuries driven in part by increasing legal representation. This particular cost driver has been addressed in provinces such as Alberta, New Brunswick and Nova Scotia by the introduction of a cap on pain and suffering awards for minor injury claims (non-minor injury claims are unaffected). This measure has effectively curbed deteriorating trends in pain and suffering awards and has produced meaningful savings as follows:

- Bodily injury loss costs in these provinces continue to be lower than levels in 2000 with decreases ranging from 10% to as much as nearly 60% in one of the provinces. By comparison, BC's bodily injury loss costs have increased nearly 85% over the same period.
- There was a noticeable decrease in the frequency of bodily injury (BI) claims post-reform in these provinces (see chart 12 below). It is likely that the cap on pain and suffering for minor injuries acted as a disincentive in certain cases; hence, some claimants and/or lawyers decided not to pursue a claim.
- Meaningful savings were realized in each province and in certain cases exceeded those savings predicted by consulting actuaries, who estimated material reductions in claims costs but did not fully anticipate the reduction in claim numbers.

Chart 12: Frequency of bodily injury (BI) claims post-reform



*Newfoundland imposed a deductible on pain and suffering awards rather than a cap

5.3.2.2 Accident benefits

Another key component of scheme reform in most provinces is an increase in claimant accident benefits for medical treatment, wage replacement and other benefits. This can be interpreted as a move towards a more care-based rather than cash-based system — approaching the fully care-based model schemes in place in Saskatchewan and Manitoba.

Accident benefits in BC are low compared to modern medical and rehabilitation costs in the care-based schemes in Canada and internationally. With such modest accident benefits in BC, reducing damages for litigation would result in many claimants possibly paying significantly out of pocket for medical and wage loss. This result can be addressed by increasing accident benefits as part of any product reform option considered.

5.3.2.3 Learnings for BC

Key learnings BC can take from reforms in other Canadian provinces are as follows:

- Caps on pain and suffering awards for minor injury claims have been effective at reducing overall loss costs, partly driven by a reduction in the overall number of claims made.
- Effective design is imperative. Careful consideration must be given to the definition of minor injury to ensure that it is clear, precise and acceptable in order to increase the efficacy of the reforms. Court challenges have been a reality in most jurisdictions where minor injuries are defined. Some injury definitions have been successfully challenged, which has led to an erosion of financial benefits over time. The lesson that can be learned from Alberta's experience is that a package of reforms intended to reduce costs may need to be coupled by offsetting improvements such as enhanced accident benefits and diagnostic and treatment protocols. Effective reforms apply restrictions to areas of cost blow-outs while increasing benefits elsewhere in order to get the right balance for claimants.
- The more complicated the reform, the more difficult the interpretation of intent becomes and the risk of challenge increases. Keep it simple and easy for consumers to understand. Ontario did not experience the same level of financial savings post reform as other jurisdictions, due to a number of factors including their multi-stage implementation, complexity of product, which resulted in interpretation issues, and a parallel spike in fraudulent activity.
- Consumers value choice — even if they do not exercise it. For example, in Saskatchewan, the introduction of choice related to the option of selecting a litigation or care-based product has resulted in the vast majority (98%) of auto owners remaining in the care-based product.

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5.3.3 Experience of scheme reforms worldwide

Personal injury schemes worldwide have been experiencing deteriorating claims experience and significant rate pressures in recent decades. In almost all jurisdictions studied, scheme reforms have been driven by similar issues to those currently being experienced in BC, in particular rapidly escalating costs for minor injury claims, increased litigation and fraud.

5.3.3.1 Escalating costs for minor injury claims

The UK: The insurance industry in the UK has been attempting to tackle rising numbers and costs of minor injury claims (e.g., soft-tissue (whiplash)) for the past decade. An estimated 75% of personal injury claims in the UK are for whiplash or soft-tissue injuries, costing the industry about £2 billion annually. Average awards for pain and suffering for whiplash claimants are reportedly in the range of £2,000–£3,000.

The Jackson report (2009) investigated the cost of civil litigation in the country and found that the current compensation system is failing as it is too slow, too expensive and fails genuine claimants who have a right to access fair, proper and timely compensation. Reforms to tackle the costs associated with civil litigation were introduced in 2013, and further measures to tackle fraud, to fix the cost of initial whiplash medical reports and to improve the independence and quality of medical evidence were introduced in 2014 and 2015.

In 2016, the UK government announced a major whiplash reform program, building on earlier reforms. Some of the proposed measures include:

- Removing compensation for pain, suffering and loss of amenity for minor whiplash claims;
- Raising the small claims limit for personal injury claims to £5,000 — up from £1,000; and
- A prohibition on settling whiplash claims without medical evidence from an accredited medical expert.

The effectiveness of such significant measures remains to be seen. However, it is clear that minor claims such as whiplash are creating severe cost pressures on insurers in the UK, similar to the recent BC experience.

France: Compensation for whiplash claims in French jurisdictions is subject to prescribed regulation, including the requirement for specific medical experts to produce a report on the injuries sustained. Rules such as this have helped to keep whiplash claims significantly lower in France compared to the UK (around 3% compared to 75%), but this number has risen significantly in recent years. Claims are being more rigorously contended in court, and legal involvement is a key contributor in rising claim awards for minor whiplash claims.

Ireland: Legal fees and whiplash awards in Ireland are purportedly three times higher than the amounts awarded in comparable cases in the UK, according to Insurance Ireland in 2016. A series of reforms is being proposed, including measures to curb these disproportionate claim costs.

New South Wales (NSW), Australia: The compulsory third party (CTP) motor insurance scheme in NSW passed a major reform in 2017 after several attempts to bring about change in recent years. Key drivers were significant rises in the numbers of minor claims and increased legal involvement in such claims driving costs upward and putting pressure on premiums. Fraud and exaggeration of claims were other key drivers for change.

New legislation was successfully passed in March 2017, with the new scheme scheduled to commence in December 2017. A key feature of the new scheme design is a restriction on benefits for minor injury claims (where a minor injury is defined as a soft-tissue or psychiatric or psychological injury only, as defined in the new legislative Act) and a significant move towards a comprehensive care model.

5.3.4 Increased legal representation and associated costs

In almost every jurisdiction where cost pressures arise, increased legal representation and higher legal fees are typically quoted as key drivers in pushing the cost of minor injury claim settlements upward. For example, in the UK, the Association of British Insurers (ABI) surveyed over 50,000 low-value motor accident claims in 2009 and 2010 and found that for every pound paid in compensation, 87p was paid in legal costs. One insurer has provided data to the Ministry of Justice showing that by 2010, average claimant legal costs represented 142% of the sums received by the injured victims.

Scheme reforms typically target legal fees and lawyer representation as a measure to reduce the overall cost of claims. Examples can be seen in NSW and Queensland in Australia — claim costs were down 25% in NSW following tighter restrictions on legal fees in 2016. In Ireland, motor insurance premiums fell by 16% in the two years after civil reforms were implemented, where measures included speeding up compensation payments and reducing claimants' costs.

5.3.5 Fraud and exaggerated claims

Reducing and deterring fraud is a priority for insurers globally. This is a particular problem in the UK, where fraud is estimated to cost the insurance industry about £1.3b a year, mostly in relation to bogus claims, with an estimated 350 frauds a day (Annual Fraud Indicator study, 2016). These include thousands of dishonest motor insurance claims that total about £835m. Industry initiatives to combat fraud include a not-for-profit organization focused on fraud prevention and detection (Insurance Fraud Bureau), a specialist police unit dedicated to prosecuting insurance fraudsters and an industry-wide database of known insurance fraudsters.

NSW in Australia established a fraud taskforce in 2016 in the wake of rising fraudulent activity in motor insurance claims. In recent months, the police fraud taskforce has made a number of highly public arrests and had successful prosecutions with operations ongoing. The taskforce has targeted claimants, lawyers and medical practitioners.

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5.3.6 Replacing lump-sum settlements with a care-based approach

The NSW scheme experienced sharp increases in the costs of future care being awarded in the years 2012–2016. Similar buffers appeared in medical treatment awards, which were also rising. This is in stark contrast to schemes that provide medical treatment and rehabilitation benefits for life on a "reasonable and necessary" basis, such as Victoria in Australia. Such schemes experience low, stable costs for medical and rehabilitation. The 2017 reforms removed the provision of medical treatment and care as a lump-sum benefit for litigated claims, instead providing lifetime benefits to claimants on an as-needed basis. Such measures are expected to significantly cut claim costs to levels similar to Victoria, Manitoba and Saskatchewan, by removing the incentive of a lump-sum payout.

5.3.7 Regulation and dispute resolution

There are many different regulatory models in Canadian and international auto and worker's compensation schemes that address claims dispute resolution and pricing of products. The common feature of all the models is the setting up of an independent government body separate from the insurer whether in a government monopoly or private insurer model. The models vary as follows:

- Alternate dispute resolution body is multi-purpose (i.e., deals with non-personal injury claim matters);
- Others bodies are solely set up to deal with alternate dispute resolution for bodily injury claims; or
- A dedicated regulator is established for the insurance product, covering dispute resolution, premium rates and general regulation and management of the scheme.

In all models, the court process is retained for litigated damages at some stage in the claims process. Some examples of auto scheme models are briefly described in the following table.

Table 9: Examples of regulatory models

Jurisdiction	Description
Ontario The Financial Services Commission of Ontario (FSCO), an arm's-length agency of the Ministry of Finance, regulates the insurance sector as well as other financial service sectors in Ontario.	▸ Disputes between consumers and insurers involving statutory accident benefits were previously handled by the FSCO. Recently, the responsibility was moved to Ministry of the Attorney General's Licence Appeal Tribunal. The first stage of the resolution process is mediation, which both the insurer and claimant are able to apply for. This occurs fairly commonly, given that in one out of three cases, the claimant and insurer are unable to agree on what constitutes fair compensation for the injury. Mediation of disputes is mandatory in Ontario before the dispute can proceed to arbitration or court. If mediation is unsuccessful in resolving the dispute, the claimant can either apply for arbitration with the FSCO or file a lawsuit.

Jurisdiction	Description
	▸ Insurer premium rates are assessed by the FSCO under a prior approval system.
Saskatchewan SGI Auto Fund is the monopoly government insurer.	▸ The Automobile Injury Appeal Commission is an independent tribunal responsible for hearing no-fault benefit appeals in Saskatchewan. The Commission has the authority to set aside, confirm or vary benefits decisions made by SGI. Its decisions are binding on the appellant, and SGI and parties have 30 days from the date of the decision to appeal to the Court of Appeal on a question of the law. ▸ The Saskatchewan Rate Review Panel advises the Government of Saskatchewan on rate applications proposed by SGI Auto Fund. The Panel reviews each application and provides an independent public report stating its opinion about the fairness and reasonableness of the rate change, while balancing the interests of the customer, the Crown corporation and the public.
Victoria, Australia The Transport Accident Commission is the monopoly government insurer.	▸ The initial step for accident benefit disputes is an internal review within the monopoly insurer (no legal representation is required), which is conducted by an area independent of the management of the claims. A high proportion of disputes are resolved at this stage. The second step is an application to the Victorian administrative appeal tribunal, which is a multi-purpose tribunal (i.e., not just for auto claims). Very few claims proceed to a court process. Limits are imposed for legal fees per dispute, which are quite low. ▸ Litigated benefits are limited to serious injuries (about 10% of claims) and to loss of wages and pain and suffering. Internal dispute resolution followed by a normal court process are the two steps. ▸ Pricing increases are assessed by the government and in practice are limited to inflation increases (there is no independent body assessing filings).
NSW, Australia – 2017 legislation The State Insurance Regulatory Authority (SIRA) is the regulator for auto and workers compensation insurance, which includes dispute	▸ The 2017 legislation builds on the previous dispute resolution system. The move from litigated damages to care benefits has resulted in a separate dispute process for care benefits: ▸ The initial step for care benefit disputes is an internal review within the insurer (no legal representation is required), which is conducted by an area independent of the management of the claims. A high proportion of disputes are expected to be resolved at this stage based on a similar process for workers compensation, which is viewed as a success.

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Jurisdiction	Description
resolution and premium rates. Auto insurance in NSW is a private insurer scheme. Icare is the monopoly workers' compensation insurer	▸ The second step is a Merit review conducted by an independent area of the regulator (similar to the workers' compensation scheme). The reviewer may refer matters to the Medical Assessment Service for review or request further information or examinations be conducted. Limits are imposed for legal fees per dispute (likely to be about $2,000 to $3,000). Importantly, lawyers are not advocates for claimants but are advisors. ▸ The regulator is setting up a Claims Advisory Service to assist claimants through the claims process in the absence of lawyers assisting claimants. The assistance starts from the date of the accident. The service is not an advocate for claimants. ▸ For litigated benefits, the dispute process is the same as in the scheme that operated from 1999. It comprises: ▸ A Medical Assessment Service that deals with disputes in relation to medical and care treatment plus assessment of whole person impairment (the threshold for access to pain and suffering); and ▸ A claims Conciliation and Resolution Service (CARS), which is an alternate dispute (i.e., not court based) process to speed up resolution of claims at a lower cost. Parties can request an exemption from CARS for complex matters and other specified cases (e.g., infant claims). ▸ Parties can then proceed to a court process. ▸ Insurer premium rates (including the monopoly workers' compensation insurer) are assessed by SIRA under a file and write system.

5.3.8 Learnings for BC

Some key learnings BC can take from scheme performance and resulting reforms around the world are as follows:

- The main driver of deterioration in schemes' financials is almost universally an escalation of minor injury claim costs to disproportionate levels. Systems that are performing well tend to have claim costs split roughly one-third minor injury compared to two-third non-minor injury claim costs. In BC today, minor injury claim costs are exceeding the cost of non-minor claim costs.
- Minor injury benefit restrictions can be subject to rigorous contest and potential manipulation by claimants and will likely need to be modified over time. For example:

- Alberta: A particular type of jaw injury (i.e., temporomandibular joint disorder) was ruled as outside of the "minor injury" definition. The incidence of such injury types has since escalated.
- New Jersey, US: Since the introduction of thresholds, claims have become more complex. For example, disc herniation is now reported in 40% of whiplash claims, compared to 1%–2% elsewhere.

- Escalating claim costs are almost always associated with increased legal involvement and/or excessive legal fees. Limiting compensation for minor claims or taking explicit measures to regulate or restrict such costs is necessary to effect reductions in litigated claim costs. The proportion of premiums being returned to claimants is a good metric for assessing the efficiency of a scheme. In BC today, claimants receive less than 60% of their premium as benefits, with the remainder going to scheme costs including legal costs and disbursements. Best-in-class schemes around the world return approximately 80% of premiums as benefits to claimants. For example:
  - Victoria (Australia): 80% of premiums returned as benefits
  - Saskatchewan: 83% of premiums returned as benefits
  - Manitoba: 104% of premiums returned as benefits
- Provision of benefits such as medical treatments on a regular basis as necessary can be a very effective way of keeping such costs low and stable. However, if not implemented properly and with appropriate controls and limits, these structures can also cause escalating costs. Examples include:
  - South Australia: Extremely generous benefits acted as disincentives for claimants to return to their pre-accident lives. Scheme reforms changed this benefit structure in 2016.
  - Ontario: Generous and complex benefits are being taken advantage of by claimants and service providers alike, resulting in claim costs increasing rather than decreasing.
- BC can learn from other jurisdictions in how to resolve claims speedily and how to reduce the number and cost of disputes. There are also different regulatory models in use by other schemes that include regulation of premiums and general regulation of schemes that BC could consider.

Major scheme reform does not happen overnight. Engagement and consultation with stakeholders, strong political leadership and carefully considered scheme design are crucial to successful implementation allowing affordable and sustainable claim costs and premiums.

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6. How is the current system performing?

BC's auto insurance system is facing unprecedented challenges. Premiums collected by ICBC today are the second highest in Canada, yet they are not high enough to cover the true cost of paying claims. More accidents are occurring on BC's roads, and the number and size of claims is increasing. Only recent government intervention has protected BC drivers from an otherwise required 15%–20% price increase. This rate protection has eroded ICBC's financial situation to a point where it is not sustainable, and **unless something significant is done, and quickly, the average driver in BC will need to pay almost $2,000 annual premium (Basic and Optional) for auto insurance by 2019, an increase of 30% over today's rates in order to return ICBC to financial health.**

The overall performance of the current BC system is detailed below, including discussion on road safety structure and trends, the current state of the insurance product, and ICBC's recent financial performance, along with observations on ICBC's approach to investment and capital management.

6.1 Road safety

In BC, road safety initiatives are defined, regulated and operated through a number of partner organizations and relevant laws and statutes. RoadSafetyBC (a branch within the Ministry of Public Safety and Solicitor General and overseen by the Superintendent of Motor Vehicles) develops road laws and policies to make roads as safe as possible. The Ministry of Transportation and Infrastructure (and municipalities) are responsible for setting safe speeds and for safe road infrastructure, while the police deliver road safety enforcement, specifically targeting the top contributing factors that lead to fatalities and serious injuries. ICBC is one of the key road safety agencies in British Columbia, with a legislated mandate of promoting traffic safety, education and awareness, as well as programs that can reduce crashes and claims costs. A number of additional partner agencies include the BC Coroner, WorkSafeBC and the Provincial Health Officer.

The governance structure[15] and shared responsibilities within the BC road safety partners group are described below. The steering committee includes representatives from partner agencies to advise on road safety matters and help move the provincial strategy forward, each with its own distinct legislative accountabilities, organizational accountabilities, mandates and ministerial reporting structures. RoadSafetyBC has taken a leadership role in bringing this strategy and structure together.

[15] Source: British Columbia Road Safety Strategy 2015 and Beyond

6.1.1 Towards Zero: Road Safety Strategies

Led by RoadSafetyBC, British Columbia road safety partners have aligned with Canada's Road Safety Strategy 2015, which promotes the long-term vision of making Canada's roads the safest in the world. British Columbia's goal is to have the safest roads in North America by 2020, measured in terms of having the lowest rates of fatalities and serious injuries per 100,000. In fact, in line with the Vision Zero movement, the ultimate goal is to eliminate motor vehicle crash fatalities and serious injuries altogether in BC.

A number of principles key to the success of Canada's Road Safety Strategy 2015 have been aligned with international best practices in road safety, including adopting the globally recognized "Safe System Approach", which enables greater progress towards safety by treating the road system as a product of a number of components:

Canada's Road Safety Strategy 2025's vision, "Towards Zero: The safest roads in the world" is based on an international best practice first adopted by Sweden in 1997, and has since been adopted by many of the world's other leading road safety jurisdictions, including the UK, New Zealand and Australia. Along with Sweden, these countries have the lowest rates of motor vehicle crash fatalities in the world.

- **Safe road users** who are well-trained and aware of driving challenges and risks and respect towards traffic rules;
- **Safe vehicles**, which are equipped with proven and effective safety designs and features;
- **Safe roadways**, road designs and land-use planning that reduce the risk of crashes, fatalities and serious injuries; and
- **Safe speeds**, including setting and enforcing safe speed limits.

RoadSafetyBC has also taken a leadership role in defining the targets and measurement for road safety effectiveness in BC, measured by:

- The number of traffic fatalities and serious injuries; and
- The rate of traffic fatalities and serious injuries involving high-risk driving behaviours.

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6.1.2 Road safety programs and initiatives: reduction in accident and fatality rates

Many road safety programs, enforcement technologies, laws and penalties have been implemented in BC over the past decades. Examples include intersection safety cameras, variable speed limits and speed campaigns, driver information systems, Graduated Licensing Program, and tougher penalties for impaired and distracted driving. Combined with improvements in vehicle and highway design, this has resulted in a significant decrease in the number of accidents and fatalities occurring on BC roads. BC's road accident rate, for example, fell by over 30% from 2005 to 2014 (from 676 to 456 accidents per 100,000 population) and for the most part is better than the Canadian national average over the period. While the BC road accident trend is positive, it compares less favourably with some of the better-performing jurisdictions around the world, such as the UK, which achieved road accident rate decreases of 39% over the same period (the UK, New Zealand and certain parts of Australia show recent road accident rates below 300 per 100,000 population).

Table 10: Global road accident rates comparison (per 100,000 population)

COUNTRY	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
AUSTRALIA*	152	158	156	158	155	149	153	150	152			
CANADA**	653	604	590	537	513	500	484	475	470	422		
GERMANY	526	505	524	498	486	454	489	478	464	482	488	
ITALY	580	574	559	529	520	513	489	446	429	415	412	
JAPAN	905	859	809	740	714	699	668	647	613	559	524	484***
NEW ZEALAND	350	363	379	356	338	322	287	275	265	249	261	
UNITED KINGDOM	463	440	420	390	374	348	338	323	302	317	300	288
UNITED STATES	913	863	827	771	723	724	711	752	731	733	760	

Reference: OECD (2017), Road accidents (indicator). doi: 10.1787/2fe1b899-en (Accessed on 04 April 2017

*Australia reports lack of reliable, nationally consistent, source of non-fatal crash data

**Transport Canada data

***2016 Japan injury data is only through November. We averaged out injury data through November (50,652/month) and added that amount in for December

There is a similar trend with fatality rates on BC roads, which showed a 42% decline from 2005 to 2014 (reduction from 10.8 fatalities per 100,000 in 2005 to 6.3 in 2014). Fatality rates in BC, however, are above the Canadian national average and significantly higher than other leading jurisdictions, including the UK by comparison, with a fatality rate of just 2.9 per 100,000 in 2015. In 2014, BC reported 56.8 serious injuries per 100,000.

Table 11: Global road fatality rates comparison (per 100,000 population)

COUNTRY	ALL	VEHICLE	MOTORCYCLE	CYCLE	PEDISTRAIN	WHO ESTIMATE	REPORTED	POPULATION (M)	VEHICLES (M)
AUSTRALIA	5.4	3.4	1	0.2	0.7	1252	1192	23.3	17.2
CANADA	6	4	0.5	0.2	0.9	2114	2077	35.2	22.4
GERMANY	4.3	2	0.8	0.5	0.7	3540	3339	82.7	52.4
ITALY	6.1	2.8	1.6	0.5	1	3721	3385	61	51.3
JAPAN	4.7	1.5	0.8	0.6	1.7	5971	4373	127.1	91.4
NEW ZEALAND	6.0	4.0	0.9	0.2	0.7	272	253	4.5	3.3
SOUTH AFRICA	25.1	16.7	No Data	No Data	8.4	13273	13802	52.8	9.9
UNITED KINGDOM	2.9	1.3	0.6	0.2	0.7	1827	1770	63.1	35.6
UNITED STATES	10.6	6.9	1.6	0.2	1.5	34064	32719	320.1	265

Reference: World Health Organization Global Status Report on Road Safety 2015

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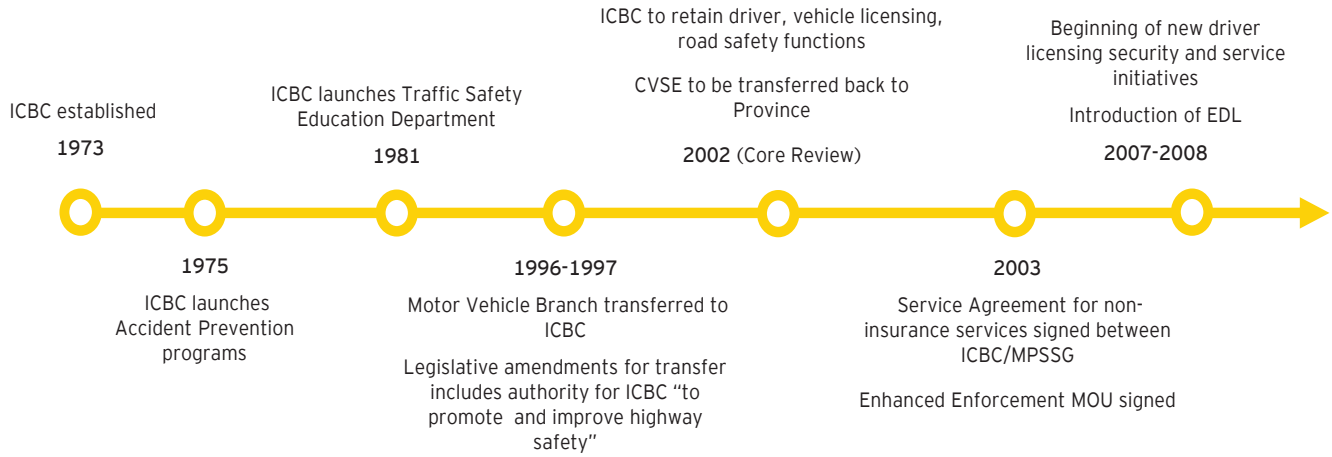
6.1.3 ICBC's role in promoting road safety

ICBC has had a significant role in introducing, supporting and funding new road safety and driver and vehicle licensing priorities since its inception in 1973. Notably, in 1996–1997, the BC government merged the Motor Vehicle Branch into the ICBC organization to allow greater promotion and improvement of highway safety under a single administrative umbrella, leveraging the infrastructure and resources available within ICBC to support major new initiatives into the BC system and ICBC's track record of successfully doing so. Similar to today's environment, at the time BC was experiencing an increase in both accident and fatality rates, and the merger served to align road safety funding to activities that deliver quantifiable improvements in terms of reduced accidents, death and injuries on BC roads.

Chart 13: Sample ICBC road safety initiatives since 1973 inception



The findings from a 2002 Core Review identified that the integration of driver licensing and vehicle licensing and registration activities, as well as road safety programs, had significant public policy benefits including cost savings due to economies of scale and supporting BC's low rate of uninsured drivers (one of the lowest in North America).

6.1.4 Road safety funding

In 2016, ICBC spent over $175 million delivering on agreed road safety responsibilities as set out under the Service Agreement with the Province of BC, and other non-insurance initiatives, including:

- $70 million spent on the administration of Driver Licensing and Testing services;
- $40 million spent on road safety initiatives, including Vehicle Registration & Licensing and Driver Training School Certification and Regulation; and
- $22 million provided as funding for the Police Services Division responsible for the oversight for the Enhanced Traffic Enforcement Program.

This $175 million of spend was funded through Basic insurance premiums, at an annual cost of approximately $50 per vehicle. This spend generated $577 million in revenues and fines, which were transferred in full to the Province (in part shared across BC's municipalities); none of those revenues were allocated back to Basic insurance.

Table 12: In 2016, ICBC spent over $175 million delivering on agreed road safety responsibilities and other non-insurance initiatives

ICBC service	Funding through Basic insurance
Driver-related service	$70 million spent on the administration of driver licensing and testing services.
- Driver licensing (standard setting, testing and issuing)	
- Driver training school certification and regulation	$105 million on road safety and other vehicle and driver delivery and administrative initiatives, including: • $40 million spent on road safety initiatives, including vehicle registration and licensing and driver training school certification and regulation; and • $22 million provided as funding for the Police Services Division responsible for the oversight for the Enhanced Traffic Enforcement Program.
- Support to OSMV (administrative driver prohibitions, vehicle impoundment program, driver improvement programs, driver fitness program, record keeping)	
Vehicle-related service	
- Vehicle registration	
- Vehicle licensing	
- Compliance operations	
Violation tickets	
- Violation ticket administration and fines collection	
- Collection of fines/levies unrelated to road use	
- Intersection safety cameras	
Other services	
- Database maintenance and information sharing	
- Social services tax collection	

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6.1.5 Increasing road accidents in BC

Despite decades of enhancements and long-term improvements in the accident trend in BC, data available from both ICBC and Transport Canada indicates an upward swing in the number of road accidents in the past few years.

ICBC tracks and reports on the total number of crashes on BC roads annually. ICBC-reported data suggests that an approximate 20,000 additional crashes per year have been taking place in BC since 2013 (a 23% increase from 2013 to 2016). Sixty percent of these accidents happen at intersections.

Separately reported Transport Canada data for BC also indicates an upward trend in the number of road accidents from 2011 onwards. As shown in table 13 below, Transport Canada data shows that BC accident rates were at their lowest in 2011 (426 per 100,000) and have increased year-on-year to a rate of 456 in 2014 (greater than the rate in 2009). BC accident rates were also below the national average from 2008 to 2013, but climbed above the national average in 2014.

Table 13: BC accident rates compared with Canadian average and other jurisdictions (shown as the number of accidents per 100,000 population)

REGION	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CANADA	653	604	590	537	513	500	484	475	470	422
BC	676	586	603	503	451	462	426	445	446	456
NL	456	429	447	402	464	404	403	392	391	391
PE	544	604	587	453	541	452	465	439	817	352
NS	524	513	655	754	804	513	520	493	447	412
NB	529	519	500	479	511	459	376	375	376	354
QC	762	650	624	562	550	549	519	483	462	436
ON	570	540	524	485	473	477	458	442	440	347
MB*	737	741	716	652	592	571	657	842	881	895
SK	688	687	685	684	652	626	650	665	636	516
AB	752	769	699	612	522	491	492	469	465	455
YT	626	746	638	724	517	637	545	549	564	484
NT	433	268	358	396	302	258	244	335	271	202
NU	240	214	48	130	131	125	128	167	113	130

Transport Canada data

*Manitoba changed traffic accident reporting in 2011 which resulted in an increased number of injuries of minimal nature being captured

The recent accident rate increase in BC is unique compared with most other Canadian provinces or territories, which continue to show a downward trend to 2014.

When the comparison to BC is expanded to include jurisdictions outside of Canada, we see both similar and conflicting trends. This Review also undertook to compare BC accident rate trends with other global jurisdictions, including selected states in the US and Australia.

- Similar to BC, 2014–2015 US data indicates an increase in road accident rates for the states where the data is available.

- In contrast to BC, each Australian state continues to show a decline in road accident rates.

US road accident rates (selected states) 2005–2015

The table below shows the declining road accident trend for selected US states from 2005 to 2015 (shown as the number of accidents per 100,000 population). Similar to BC, 2014–2015 data indicates an increase in road accident rates for a number of states where the data is available.

Table 14: US road accident rates (per 100,000 population, selected states) 2005–2015

COUNTRY/ STATE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
UNITED STATES	913	863	827	771	723	724	711	752	731	733	760
CALIFORNIA	822	773	741	667	638	623	606	603	590		
MARYLAND	998	966	932	865	841	779	772	762	727		
MICHIGAN	905	822	811	756	720	723	736	723	727	729	757
MINNESOTA	745	687	689	648	598	596	575	552	573	546	554
OREGON	810	816	760	718	746	804	625	635	592	618	721
WASHINGTON	1,070	995	856	766	727	699	668	665	635	658	664

*Accident data secured from state specific Department of Transportations and Department of Public Safety

Australia road accident rates (selected states) 2005–2016

Table 15 below shows the declining road accident trend for selected Australian states from 2005 to 2016 (shown as the number of accidents per 100,000 population). In contrast to BC, each state continues to show a decline in road accident rates.

Table 15: Australia road accident rates (per 100,000 population, selected states) 2005–2016

STATE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
NEW SOUTH WALES	434	433	436	399	400	390	393	375	354	331	306	
VICTORIA		350	345	346	330	323	320	308	302	305	301	283
QUEENSLAND	462	457	482	475	436	404	376	370	361	344	325	

Reference: Data from the relevant state roads and transport authority on casualty numbers 2015

Given the focus globally on road safety – including safer vehicles, safer road infrastructure and preventing high-risk driving behaviours – an increasing trend in crashes on BC roads is clearly a problem, while leading jurisdictions on road safety (certain parts of the US aside) are experiencing decreased crash frequency.

Currently, in BC, as in many other jurisdictions, the top contributing factors in accidents involving a death or serious injury are speed, distractions and alcohol – accounting for 84% of all road fatalities in BC.

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Table 16: Causes of crash fatalities in BC

Distracted driving	Speed	Impaired driving
Currently, distracted driving is responsible for **more than one quarter** (30%) of all car crash fatalities in BC	Speeding is the leading cause of car crash fatalities in BC and is currently responsible for **more than thirty percent** (31%) of all car crash fatalities in BC	Impaired driving is currently responsible for **more than twenty percent** (23%) of all car crash fatalities in BC, of which **over a quarter** (28%) are 16–25 year olds
= 84% of all crash fatalities in BC		

Data reviewed suggests that rising frequency of accidents from 2014 to date has added approximately $550m to ICBC's claims costs. This figure is close to the current gap in premiums (i.e., the difference between the estimated cost and premiums being charged) of $560m.

The significance of an effective road safety program is instrumental in order to reduce the number of accidents currently occurring on BC roads. There is an immediate need to increase the effectiveness of BC's road safety approach to reduce the upswing in accidents currently experienced across BC. By targeting the leading contributing factors highlighted above and implementing solutions that successfully change risky driver behaviours, BC should see fewer accidents on BC's roads, reducing the tragic human consequences of injuries and loss of life. The number of claims being filed would also be reduced, leading to significant claims savings and reduced burden on the BC health system.

6.2 Financial performance

As a public auto insurer, ICBC is committed to both affordable insurance premiums (money coming in), and providing drivers with the protection they require in the event of a claim (money going out). As such, the organization must maintain sufficient capital and assets to be able to pay valid claims as they arise and importantly to provide for any significant losses due to unforeseen events such as natural catastrophes or asset fluctuations.

A review was undertaken to determine the financial performance of ICBC over recent years to determine the organization's ability to meet required ongoing funding commitments, and the efficiency of its business operations in doing so. As described in greater detail below, the review of ICBC's financial performance comprised comparison to relevant industry standards and performance of other property and casualty insurers across North America, including a number of components of ICBC's Basic and optional products as follows:

- Claims services costs (the costs of administering Basic claims presented to ICBC)
- Premium taxes and broker commissions paid (the distribution costs of the Basic product)
- Insurance operating costs (non-claims, non-distribution related expenses required to run ICBC)
- Road safety and loss management costs
- Income generated through investment and other activities

Note that all figures presented in this section (Section 6) are in nominal values, i.e., have not been adjusted for inflation to current dollars.

6.2.1 Recent financial results

ICBC's recent financial results are summarized in the table below. The results are shown separately for Basic insurance, optional insurance, and in total for each of the last three years ending December 31[16].

[16] The December 31, 2016 results are unaudited since ICBC is changing its year-end to March 31. The latest set of financial statements will be for 15 months ending March 31, 2017 – audited versions of these were not yet available for this review.

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Table 17: Summary of ICBC's recent financial results

			2014			2015			2016	
	($m)	Basic	Optional	Total	Basic	Optional	Total	Basic	Optional	Total
1.	Earned premium + service fees	2,508	1,739	4,247	2,713	1,829	4,542	2,956	1,997	4,953
2.	Claim costs	2,395	1,165	3,560	2,858	1,184	4,042	2,961	1,697	4,658
3.	Claims related and operating expenses	463	582	1,045	569	597	1,166	490	729	1,219
4.	Underwriting income [= 1 - 2 - 3]	(350)	(8)	(358)	(741)	75	(666)	(495)	(429)	(924)
5.	Investment income	559	293	852	608	312	920	343	176	519
6.	Insurance income/(loss) [= 4 + 5]	208	285	494	(134)	387	254	(152)	(253)	(405)
7.	Non-insurance operating costs	121	0	121	123	0	123	128	0	128
8.	Net income/(loss) before income transfer [= 6 - 7]	87	285	372	(257)	387	131	(280)	(253)	(533)
9.	Income transfer	0	0	0	0	0	0	201	(201)	0
10.	Net income/(loss) after income transfer [= 8 + 9]	87	285	372	(257)	387	131	(79)	(454)	(533)

Net income (row 8 in the table) shows that ICBC incurred total losses of approximately $533 million in 2016, comprising a $280 million loss in the Basic insurance product and a $253 million loss in the Optional product. The $280 million loss in the Basic product during 2016 was preceded by a loss of $257 million during 2015 for a combined two-year loss of $537 million in the Basic product. This is despite the fact that earned premiums increased in 2015 and 2016, due to additional vehicles being insured as well as rate increases. The significant loss for the Optional insurance product in 2016 of $253 million is in stark contrast to the two previous years, where total profits were about $670 million.

Loss ratios are a standard insurance industry metric used to express the percentage of premiums collected that are paid out in claim costs. For example, a loss ratio of 50% would imply 50% of premiums collected went towards paying claim costs. The target loss ratio[17] can be considered the breakeven point — that is, if claims cost as a percentage of premiums collected is equal to the target loss ratio, the insurer would break even with the remaining portion of premiums collected covering all expenses and a cost of capital to support growth, net of expected investment income. The table below

[17] The target loss ratio can be considered a "break even" loss ratio. It is the proportion of premium available to pay claims after all expenses, including a cost of capital to support growth, net of expected investment income.

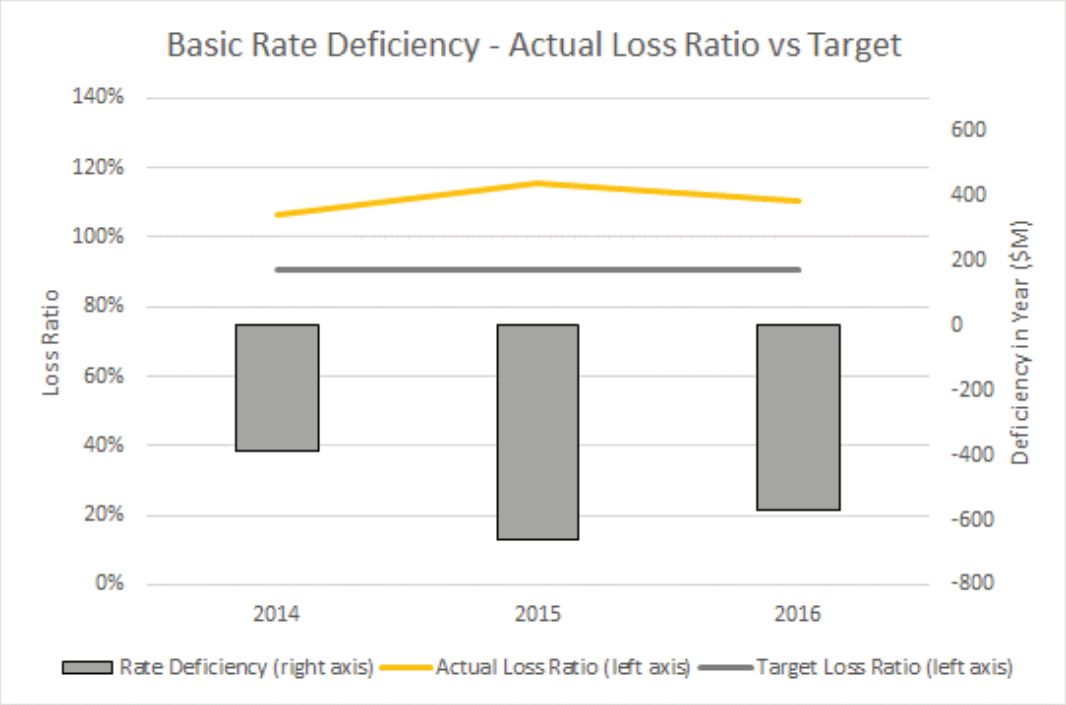
compares the actual loss ratios for the Basic insurance product from the three most recent years compared to the target loss ratio.

Table 18: ICBC target and actual loss ratios for the Basic insurance product

	2014	2015	2016
ICBC actual loss ratio	106.5%	115.6%	110.3%
ICBC target loss ratio	90.7%	90.7%	90.7%

When the difference between these two ratios is multiplied by the current year earned premiums, we are provided with an indication of the amount of the deficit in the current premium rates. As illustrated below, for ICBC, this indicates that current rates were deficient each of the past three years,[18] with the deficiency growing to well over $500 million in both 2015 and 2016. The data also shows an indicated deficiency of $567 million, or 22%, at December 31, 2016.

Chart 14: Basic product premium rate deficiency



[18] The deficits calculated in the foregoing will differ somewhat from those shown in the financial statements since these figures exclude the impact of adjustments from prior year claims and include a capital maintenance charge.

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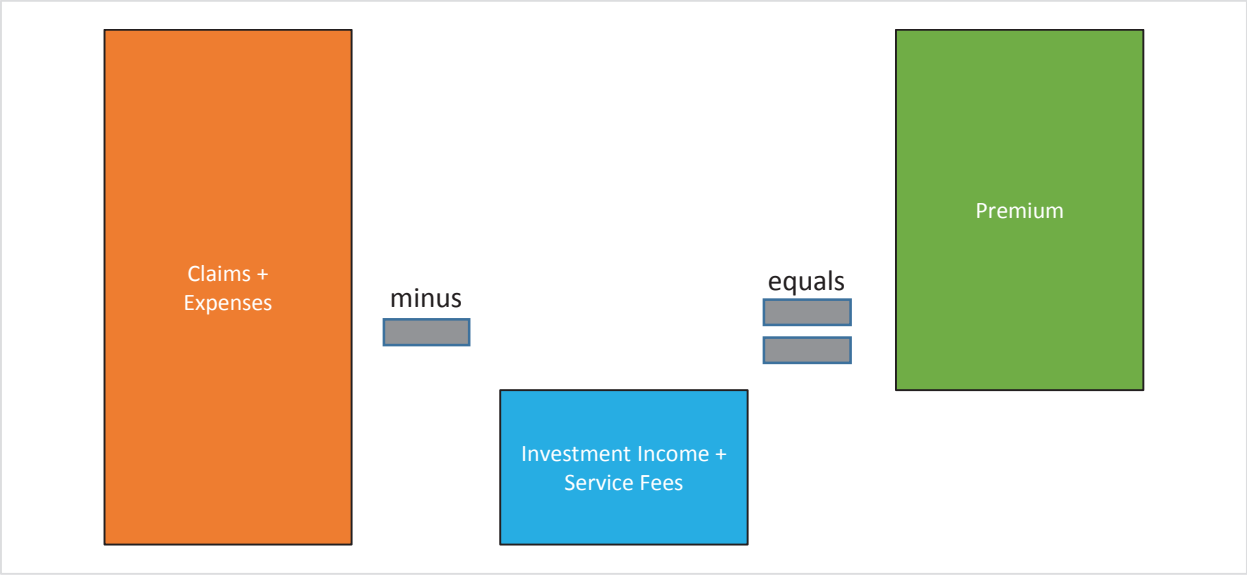
6.2.2 ICBC's operational costs

In simple terms, the Basic premium should be set at the amount required to pay for expenses and claims, less revenues generated from investment income and service fees. ICBC has incurred significant losses on the Basic product over the last three years, and current Basic premiums are materially insufficient to cover expenses and claims incurred.

Chart 15: Components of Basic product premium



Expenses

ICBC's expenses are summarized in the table below for Basic and Optional over the last three years. The total expenses incurred by ICBC in the Basic product represented 21% of earned premiums, which at a high level compares favourably to the national average of Canadian property and casualty insurers (33%).

More detailed comparisons reveal that commissions paid to brokers on the Basic product are less than those paid in the private auto insurance market, and hence full comparisons cannot be made at the total expense level. For that reason, we further break down a number of sub-categories that make up ICBC's expenses to include claims services costs, premium taxes and broker commissions, and insurance operating costs.

Table 19: ICBC expenses

	2014			2015			2016 (Unaudited)		
($m)	Basic	Optional	Total	Basic	Optional	Total	Basic	Optional	Total
Claims services costs	173	110	284	166	106	271	183	117	299
Road safety and loss management costs	49	3	51	47	3	50	45	3	49
Insurance operating costs	114	128	242	115	130	244	117	135	253
Premium tax and commissions	127	341	468	241	359	601	145	474	619
Subtotal – claims-related and operating expenses	463	582	1,045	569	597	1,166	490	729	1,219
Non-insurance operating costs	121	0	121	123	0	123	128	0	128
Total	584	582	1,166	692	597	1,290	618	729	1,347

Premium tax rates vary by province. In BC, the premium tax rate is 4.4%, which is among the higher rates for property and casualty policies in Canada. However, it is not controllable by ICBC and hence we have not considered this item further in our review. ICBC insurance brokers' commissions are substantially all based on a per-policy fee, which represents a very small proportion of the overall premium costs and reflects the efficient nature of the Basic policy administration process. Premium taxes and broker commissions do not have a significant impact on ICBC's financial performance.

As a public insurer, ICBC would pay more in road safety and loss management costs than insurers in provinces with private markets, thus these expenses need to be excluded to perform like-comparisons of expenses to industry averages. This leaves claims services costs and insurance operating costs as the key expense items to be compared to the industry.

Claims services costs – the costs of administering the Basic claims presented to ICBC

Claims services costs represent the costs of servicing claims that are not allocated to specific files (unallocated loss adjustment expenses, or ULAE). Examples of expenses included in ULAE include:

- Salaries and benefits for claims staff;
- Occupancy costs for claims functions;
- IT costs associated with claims operations; and
- Other overhead associated with claims operations.

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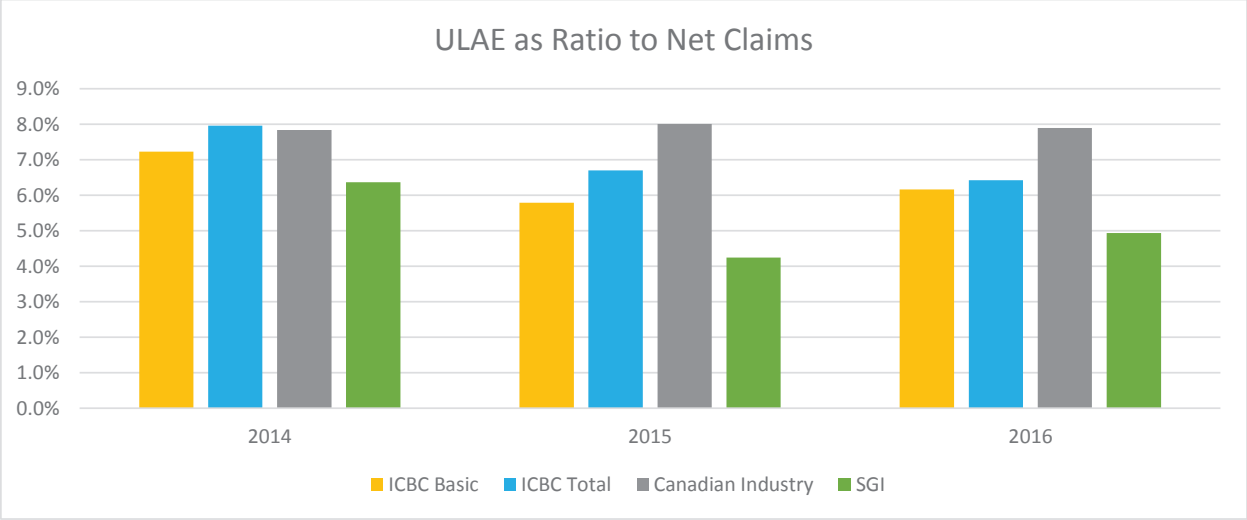
The regulatory financial statements[19] of Canadian property and casualty insurance companies require ULAE expenses to be explicitly reported. The following chart compares ICBC's ULAE expense ratio (as a ratio to net claims) for Basic and overall to the Canadian industry average and to another Canadian government insurer (SGI).

Chart 16: Unallocated loss adjustment expense ratio to net claims



Broadly, ICBC claims services costs are slightly below Canadian industry averages. In comparison to SGI, ICBC's claims services costs are a higher percentage of net claims, though it is worth noting that SGI's claims are not litigated claims since it has a comprehensive care scheme (i.e., no rights to sue).

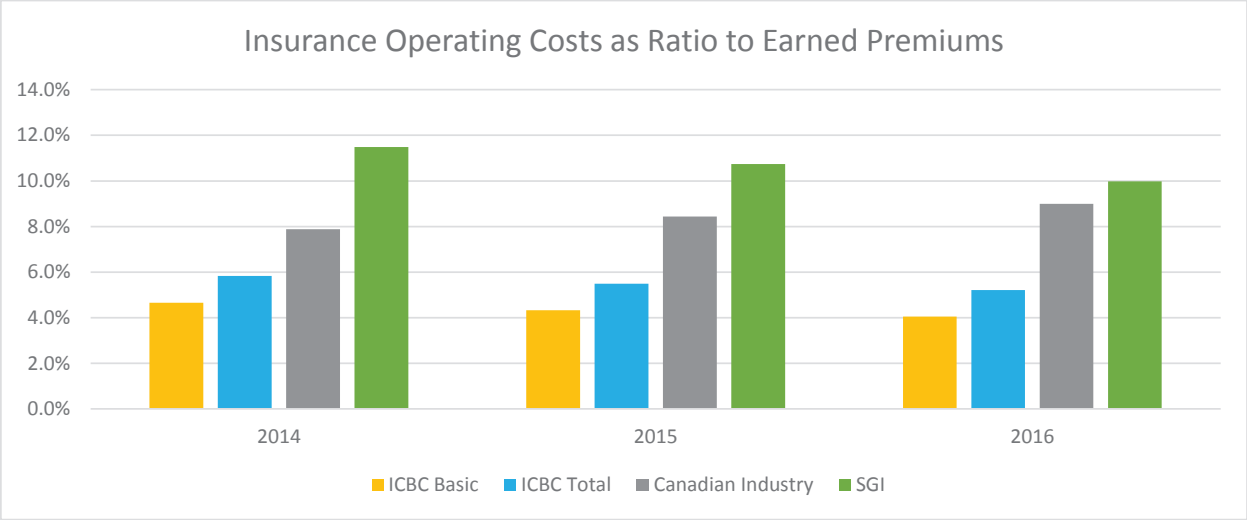
Insurance operating costs

Insurance operating costs provide for compensation and benefits for personnel not involved directly in claims, such as information technology, human resources, management, as well as investments in technology, buildings and depreciation of other assets.

We have compared ICBC's insurance operating costs to Canadian insurers and SGI as reported in their P&C-1s in the following chart.

[19] Canadian property and casualty insurers annually complete a P&C-1, which is a regulatory financial statement with a defined reporting framework. ICBC also completes a P&C-1 under the same framework and hence this facilitates comparisons of ICBC to the Canadian industry. Information from Canadian P&C-1s is available to us through MSA Research Inc. (MSA) tools, which is licensed by EY.

Chart 17: Insurance operating costs as a ratio to earned premiums



ICBC's insurance operating costs compare very favourably to the Canadian industry and to SGI.

As detailed above, the increasing number and cost of claims is leading to a need for significantly higher Basic premiums in BC than are being charged today. The outcomes from the financial review find that due to the high levels of claims, ICBC's near- and long-term financial condition is being seriously compromised, having experienced financial losses in excess of $500 million during the 2016 year. The financial review also showed that costs associated with ICBC's operation of the Basic product do not contribute in a significant way to the recent poor financial performance.

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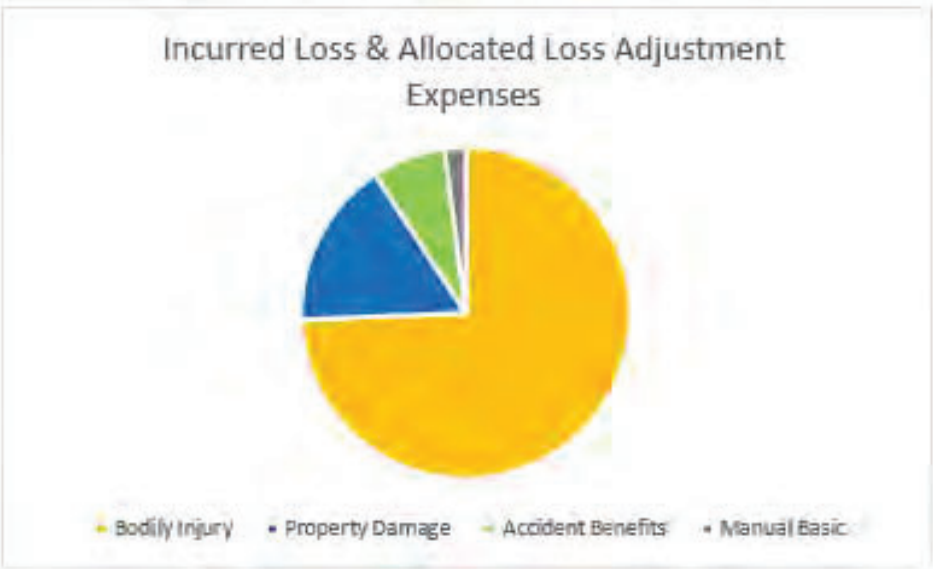
6.3 Product

Up until recently, the litigation-based model operating in BC had for the most part delivered a stable and affordable product to the citizens of BC. However, a number of troubling trends have emerged in recent years, with no indication that the underlying issues will correct themselves.

While we reviewed all aspects of the Basic product, bodily injury litigated claims[20] comprise approximately 74% of total Basic claims costs, so it is imperative these costs be controlled in order to manage overall Basic premium rates.

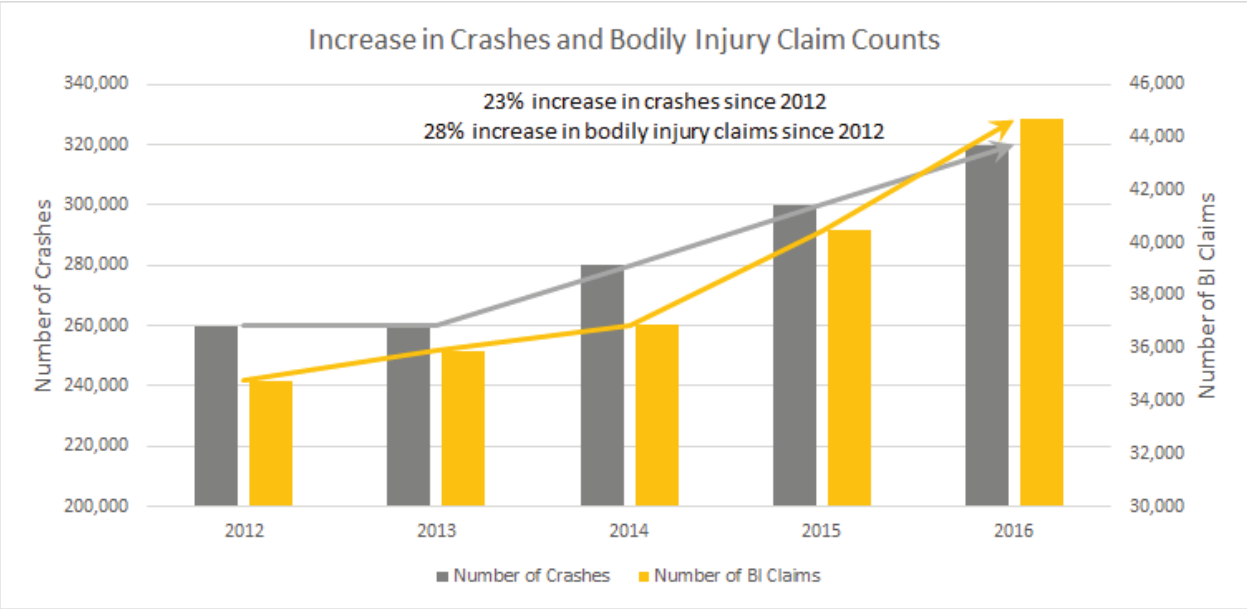
Chart 18: Bodily injury claims comprise approximately 74% of total Basic claims costs



The current state of the Basic product is being challenged by a combination of a number of factors in relation to the bodily injury component as discussed in the following paragraphs and charts. The number of bodily injury claims being filed is going up faster than the number of accidents. Naturally, having more crashes will lead to an increase in the number of claims. However, in BC, the rate of claims has been outpacing the rate of crashes, suggesting the possibility of changes in claimant and possibly lawyer behaviour.

[20] Bodily injury claim costs, which comprise 74% of total Basic claims costs, include the costs of litigated minor and non-minor injury claims plus the legal and related costs for both the claimant and defendant.

Chart 19: Crashes and bodily injury claims since 2012



The number of crashes has increased significantly in a relatively short number of years — that is, by 23% in four years — while the number of reported bodily injury claims has increased by 28% over the same period.

6.3.1 Increasing cash settlements for minor injuries

People injured in auto accidents rightly expect to be reimbursed for out-of-pocket medical costs, lost wages and for pain and suffering as a result of injuries from auto accidents. The entitlement to recover these costs is not in question. The question that must be considered is the fairness of asking Basic policyholders — all BC drivers — to pay more and more in premiums to allow the small portion of people who suffer minor soft-tissue injuries to receive ever-increasing awards, of which pain and suffering is by far the biggest component. The average cost of such awards has increased by nearly 8% per annum since 2000, which is almost four times price inflation, a rate of increase that is simply not sustainable without unrealistic increases to Basic premiums. The increase in the total cost of minor claims since 2012 has exceeded 14% per annum, which is roughly seven times price inflation.

In order to better understand the cost drivers of bodily injury claims, we undertook to review the costs of closed claims over the period 2000 to 2016 in more detail. Claims were subdivided into minor injury[21] and non-minor injury claims (moderate, serious and catastrophic claims). The numbers of

[21] We have used the Alberta definition of minor injury, which considers an injury minor if it is a sprain, strain or a whiplash-associated injury other than a neurological disorder or a fracture or dislocation of the spine. Other schemes have similar definitions of minor injury.

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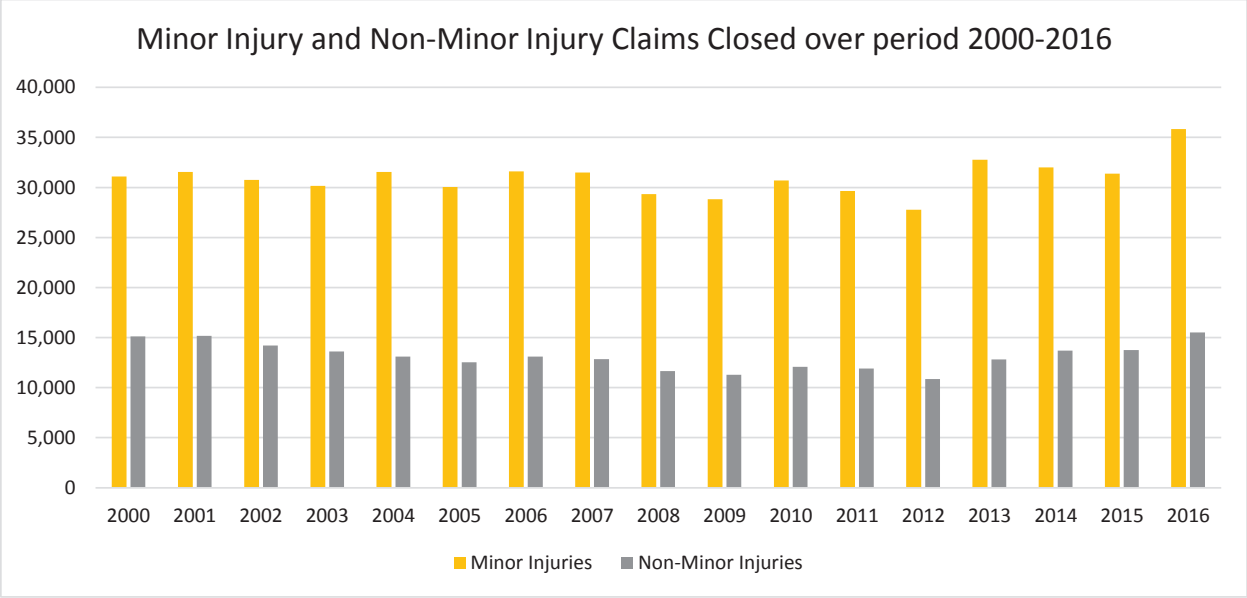
minor and non-minor injury claims closed each year from 2000 to 2016 are shown in chart 20 below. As can be seen, there are over two minor injury claims to every one non-minor injury claim.

The chart shows that the number of minor injury claims closed has been relatively stable around 30,000 per annum but in recent years has increased to 35,000 in 2016. We expect the number of minor injury claims in 2017 and later years will increase above 35,000 as the significant increase in reported claims in the last few years are settled.

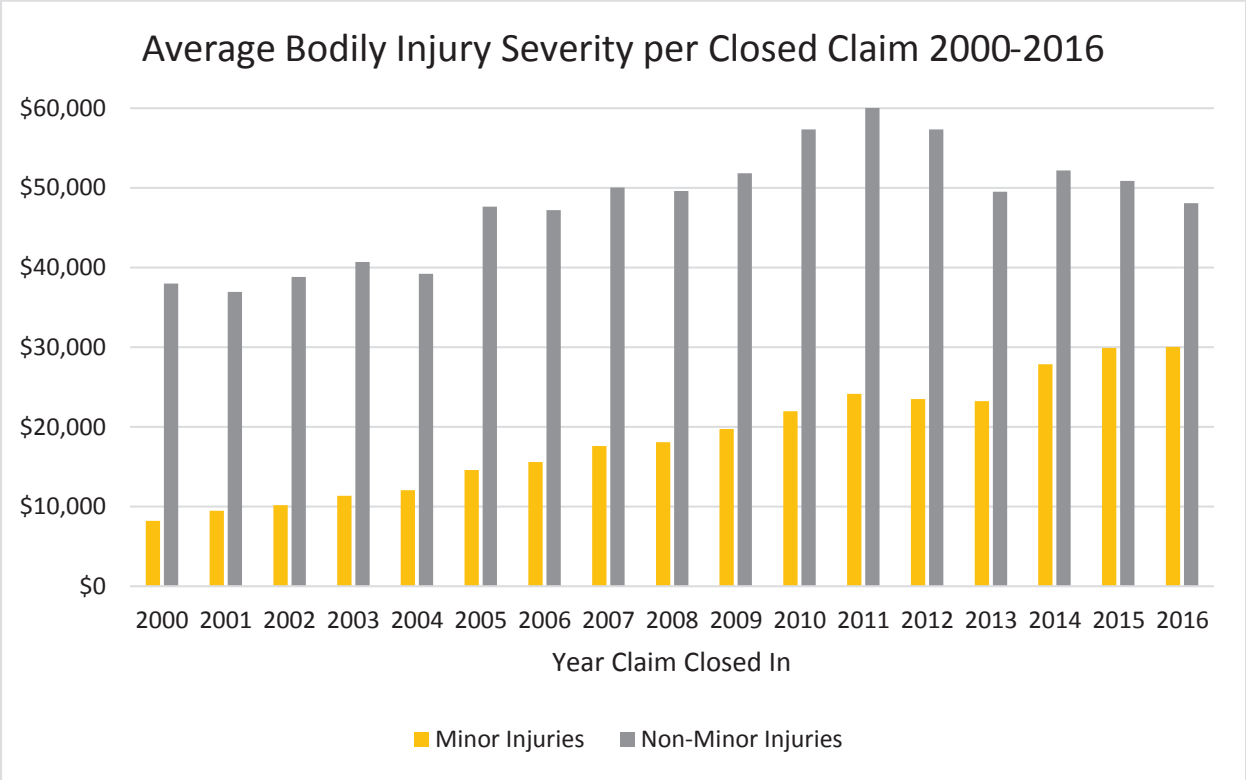
Non-minor claims show a decreasing trend from 2000 to 2012 but have since increased each year, reflecting the increasing crash rates. As with minor injury claims, we expect the number of non-minor injury claims in 2017 and later years will continue to increase well above 15,000 as the significant increase in reported claims in the last few years are settled.

Chart 20: Number of minor and non-minor injury claims closed from 2000–2016



The review found that the average paid out for bodily injury closed claims is increasing more rapidly for minor injuries than non-minor injuries, with minor injuries now approaching the average amount more seriously injured claimants receive. In 2000, the average size of closed minor claims was about $8,000, which increased to about $30,000 in 2016, an increase of nearly four times or an annual increase of over 8% per annum, more than four times price inflation. In comparison, the increase for non-minor injuries was only 26%, which is about 1.4% per annum, or less than price inflation.

Chart 21: Average bodily injury severity per closed claim 2000–2016



Looking deeper at the underlying components of bodily injury claims, the trend in minor injury claim severity is mainly driven by pain and suffering awards. The average costs for pain and suffering for minor injuries have been increasing at unsustainable rates having more than tripled since the early 2000s. By comparison, the average pain and suffering awards for non-minor injuries have increased by 46% over the same period, a rate much closer to the rate of price inflation. As a result, the average award for minor injuries is approaching the average amount received by non-minor injuries claimants.

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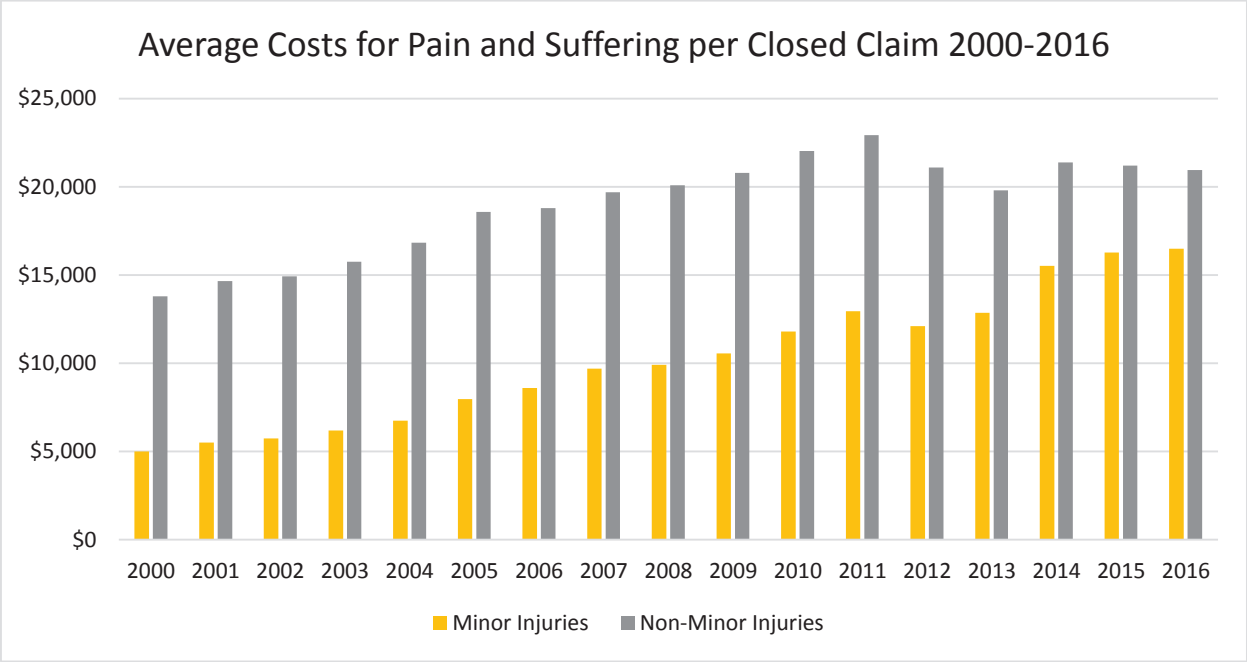
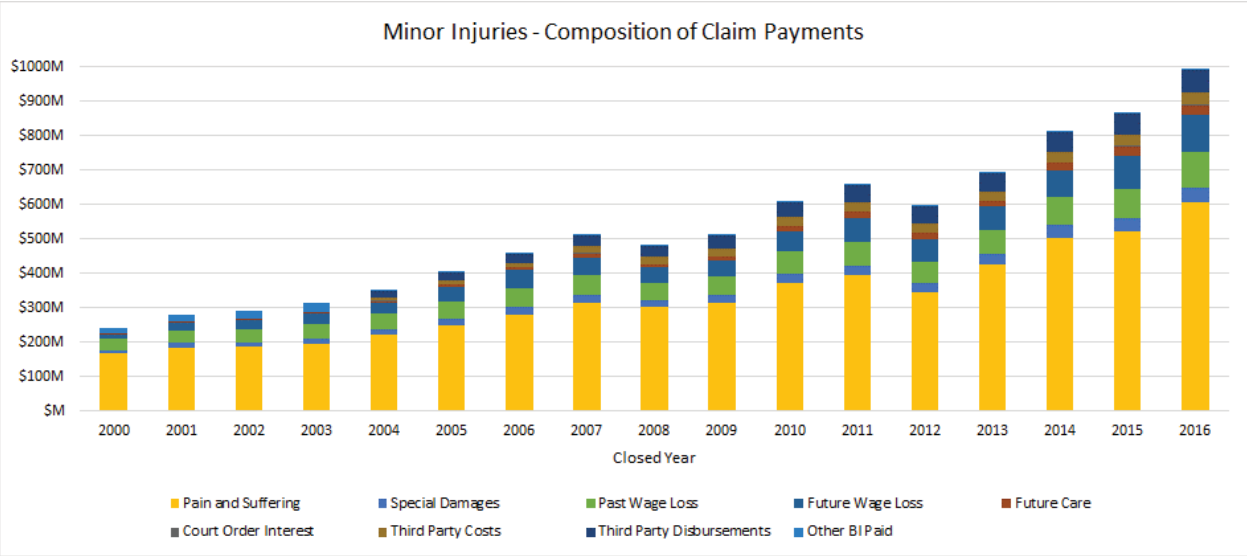
Chart 22: Average costs for pain and suffering per closed claim 2000–2016



When considered as a total cost, these awards present a significant burden on Basic auto insurance rates, as pain and suffering awards for minor injuries alone accounted for over $600 million for claims closed in 2016, or about two-thirds of the total cost of these claims.

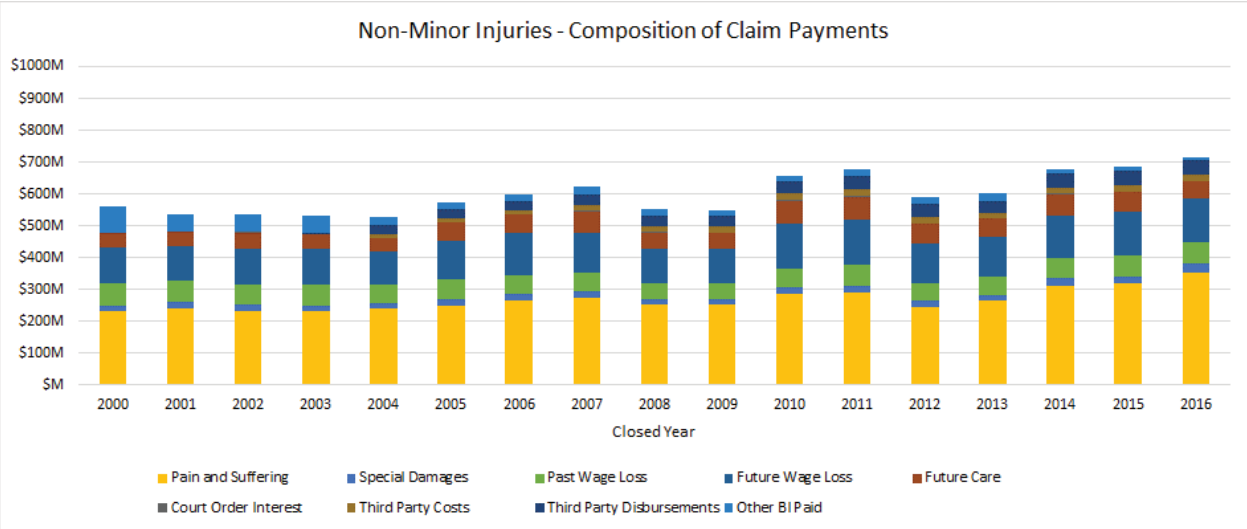
Chart 23: Minor injuries – composition of claim payments



Compared to the total costs for non-minor injuries, pain and suffering costs for minor injuries have increased much more significantly over the period and are a greater cost to the system despite their less serious nature.

In contrast, pain and suffering costs for non-minor injuries have remained fairly stable.

Chart 24: Non-minor injuries – composition of claim payments



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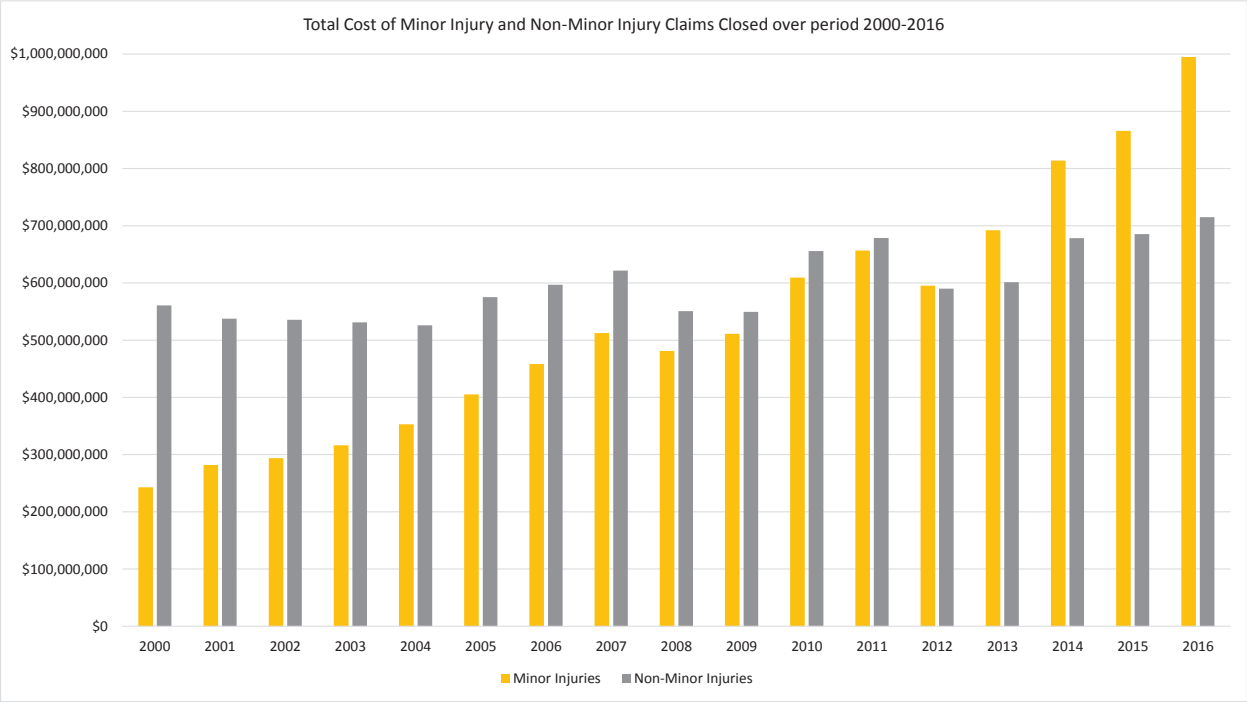
Claim costs for minor injuries have increased from 30% to almost 60% of total bodily injury claims costs since 2000.

The increasing number of minor injury claims has been exacerbated by the higher cost of settling these claims. This has led to minor injury claims costs[22] now amounting to 60% of total bodily injury claims costs compared to only 30% of costs in 2000. In contrast, minor injury claims in other jurisdictions that have more stable claims costs account for a portion of total costs closer to that of the BC scheme in 2000 (examples include Australian schemes).

Since 2012, the total annual cost for minor injury claims has been greater than the total costs of non-minor injury claims, with minor injury claims in 2016 costing $995 million compared to non-minor injuries costing approximately $715 million. This is significantly different to most Canadian and international schemes with stable claims costs and relatively low premiums.

Chart 25: Total annual claim costs for minor injuries are now greater than non-minor injuries

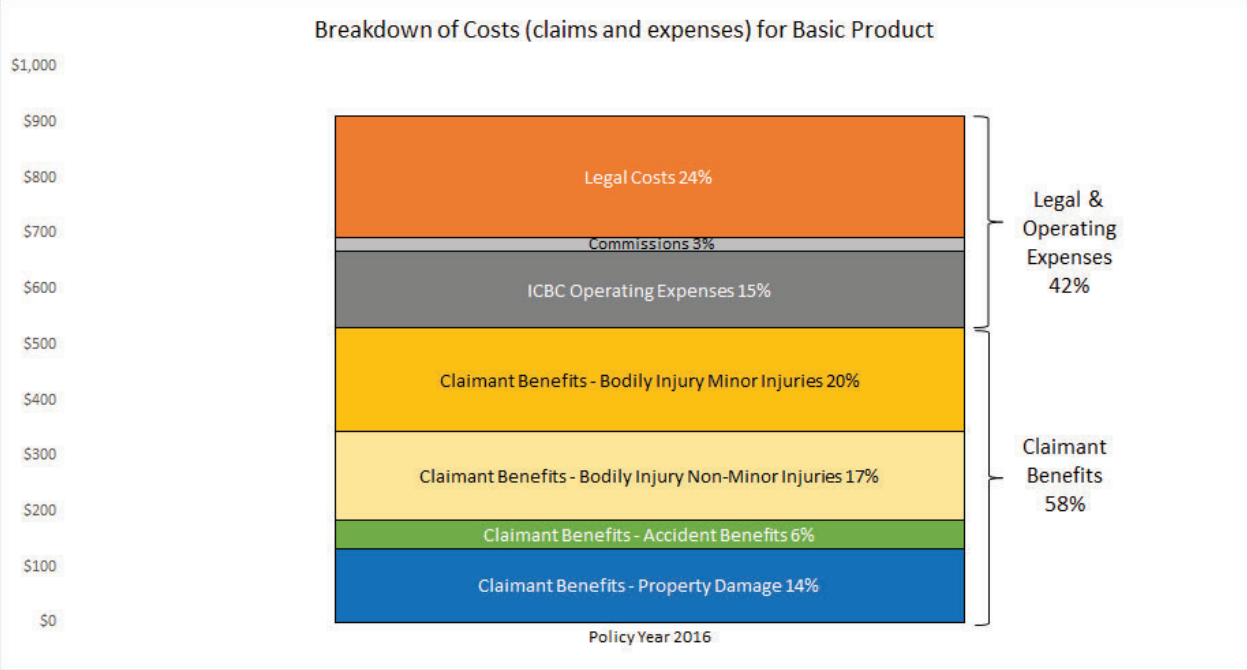


In addition to the claim costs, bodily injury litigated claims incur significant legal costs. Claimants pay a portion of their settlement or award to lawyers through contingency fees, which can be as high as 33%. ICBC is also required to pay legal costs for its defense of the claims, and both sides incur expenses for completing medical and other expert reports to help strengthen their respective cases. As a result, the system is viewed as being quite inefficient — that is to say that only 58% of premium dollars are returned to policyholders through claim payments.

[22] Cost of claim payouts only (i.e., not including associated legal and other claim expense costs)

Chart 26 below shows the breakdown of claims costs and expenses in 2016 incurred against BC's Basic insurance product. Of particular note, minor injuries account for more annual cost than non-minor injuries, and legal costs are higher than either of these costs.

Chart 26: Breakdown of claim costs shows how little is returned to the claimant



Minor injuries account for 20% of the total annual cost, while non-minor injuries account for less at 17%. In Canadian and international jurisdictions with stable claims costs and relatively low premiums, minor soft-tissue injury costs are roughly half those of non-minor injuries.

Legal costs account for 24% of total annual costs, greater than the cost to run ICBC, and benefits received by either minor injuries or non-minor injuries.

The figures in chart 26 above are based on ICBC's most recent revenue requirement application. ICBC expenses include claims related and operating expenses; premium tax and non-insurance expenses are excluded.

Legal costs include the following:

- Legal fees and disbursements – ICBC's defense costs and costs for medical examiner or other such expert reports obtained in their defense of claims;
- Third-party costs and disbursements – portion of claimants' legal costs and medical examiner or other expert reports obtained by the claimant and their counsel, which are later reimbursed by ICBC; and

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- Estimated lawyer contingency fees (assumed at 25%) – the portion of claimants' award owed to their lawyers.

Claimant benefits (most in the form of lump-sum settlement proceeds) are the portion of claims paid out that go directly to claimants. This includes payments for such things as claimants' medical expenses and loss of wages. Expenses associated with claims such as legal costs are not included within claimant benefits.

The most recent revenue requirement application was used to estimate the claimant benefits by removing estimated adjustment expenses and legal costs from the projected claim and expense payments. The portion of bodily injury claim benefits for minor and non-minor injuries was estimated using the closed claim analysis, specifically the portions of losses from claims closed in years 2013 to 2015, using Alberta's minor injury definition to categorize claims as either minor or non-minor.

6.3.2 Court claim costs are disproportionately high and the Court Rules process is inefficient

Litigated claims, including those that settle before trial, are costing ICBC significant amounts in costs, disbursements and legal fees — in 2015 this amounted to over $150m for claims that resolved for less than $100,000. Moreover, half of those actions resolved for less than $50,000. Processes and procedures for court actions are provided by the BC Supreme Court Civil Rules ("Rules of Court"). Significant changes to the Rules of Court were implemented in 2010 — a key component was to embed the concept of proportionality into the application of all Rules, in particular via a "fast track" litigation process. However, based on ICBC data since 2010, there is no indication that the costliness or timeliness of claims has been improved. Conversely, there are elements of the process that can hinder ICBC's defense of the claim, such as little incentive to provide early disclosure of evidence and medical reports. This process could be made far more efficient and fair for all parties with proper regulation and duties for both parties such as mandatory early disclosure of documents, sharing of medical evidence, and application of the concept of proportionality to restrict the unnecessary use of expert evidence and limit excessive claims for recovery of costs and disbursements incurred when advancing a minor injury claim.

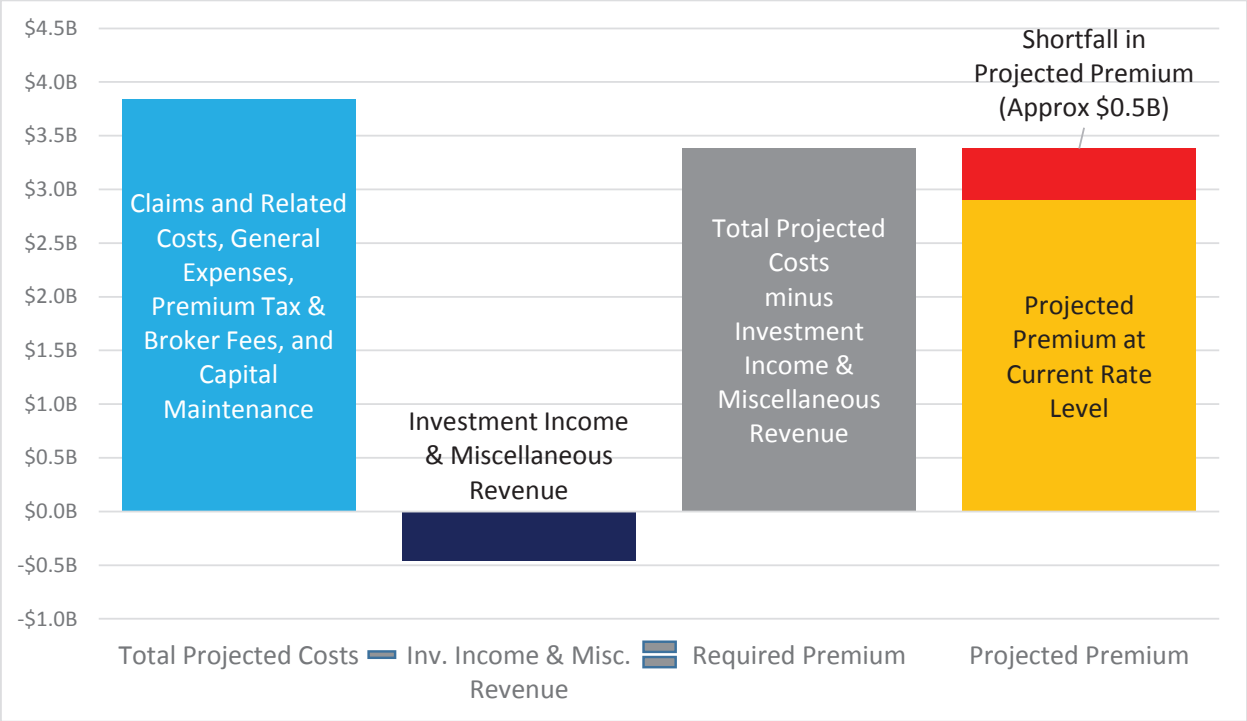
6.3.3 BC's accident benefits are outdated

In addition to the very significant total payments for injuries made by ICBC on behalf of at-fault drivers, Basic insurance also provides accident benefits to all insureds regardless of fault. These accident benefits are particularly important to those injured as a result of their own actions. Most of the accident benefits provided through the Basic product have not been updated since 1991, and as a result most observers would consider them to be inadequate as they leave those claimants receiving only accident benefits significantly out of pocket. To illustrate, consider the difference in the maximum weekly wage loss benefit of $300 and the 75% of gross weekly wages criteria. In 2016, the average gross weekly wage in British Columbia was roughly $920. Applying 75% to this amount would result in weekly wage loss benefits of $690 if not for the $300 cap, which goes to show its inadequacy. Likewise for the other benefits, with no changes to the benefit limits in the last 25 plus years, inflation has eroded their value, which leaves claimants paying costs out of pocket, providing more reason to seek recourse through the litigation process. The inadequacy of the benefits has a more severe impact on

the most seriously injured at-fault claimants, who have no opportunity to recover amounts beyond the current limits.

6.3.4 Insurance is becoming more expensive for British Columbians

With appropriate changes to the product design, it would be possible to improve the efficiency of the system – return more of every premium dollar to claimants – and decrease the total costs of the system to rein in rate increases. Without change, however, Basic rates will continue to be deficient as seen in the most recent revenue requirement application (prior to transfer from optional), where projected costs net of investment income and miscellaneous revenue were nearly $500 million higher than projected premiums to be collected in the next policy year.



Since the last revenue requirement application, this shortfall has continued to increase and is estimated to now be closer to $560 million[23].

Affordability is a fundamental principle of auto insurance in BC. Given that Basic auto insurance is compulsory, the Basic plan has been designed to be delivered at a price that auto owners can afford. Recently, BC drivers have been protected from an otherwise required 15% to 20% price increase only through government intervention and rate-smoothing mechanisms. This rate protection has eroded ICBC's financial situation to a point where it is no longer a sustainable method to manage future insurance rates. The average driver in BC may need to pay almost $2,000 annual total premium for

[23] Assuming premium increases of 2% – in line with rate of inflation

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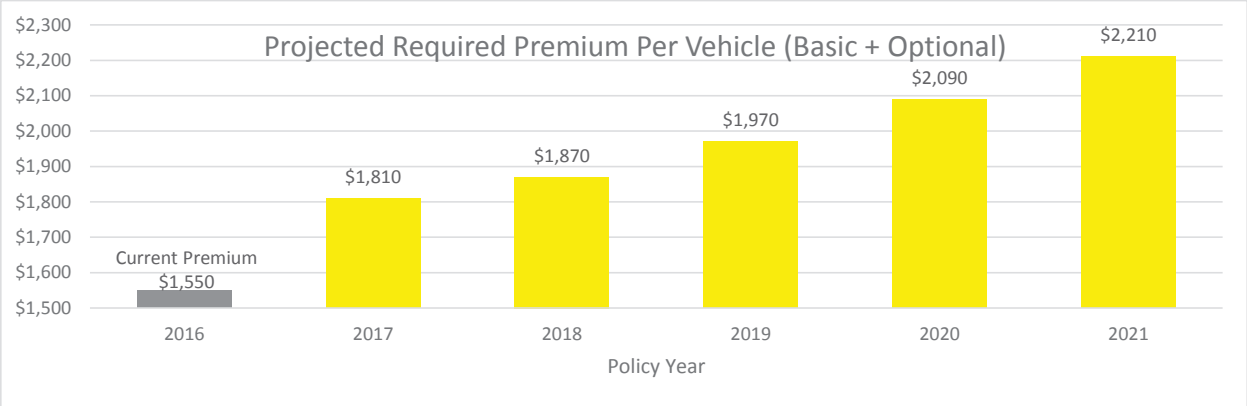
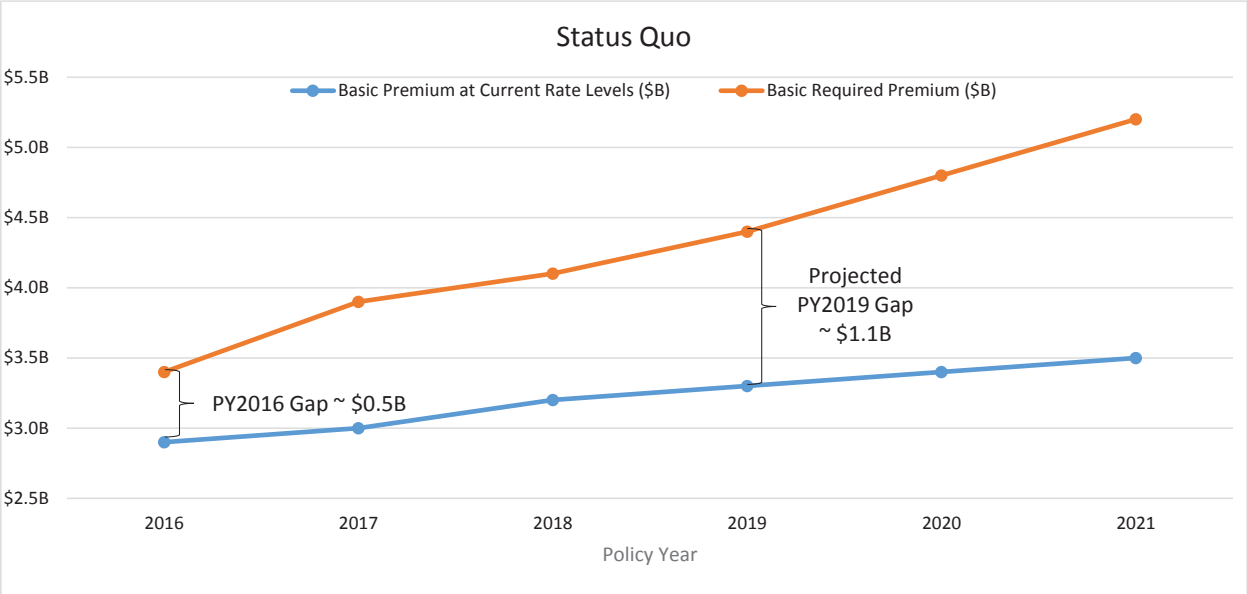
auto insurance by 2019, an increase of 30% over today's rates, assuming current trends persist, the objective is to have ICBC's rates cover its costs, and significant reform is not undertaken.

Chart 27: Projected required premiums 2019 and beyond



Indeed, there is a huge gap of $560m today between the premiums collected under the Basic product and claims costs. With the trend of increasing crashes and claims costs in BC, this gap is projected to increase to $1.1 billion by 2019 if it is not addressed.

Chart 28: Projected rate gap 2019 and beyond



Our projections in the above charts do not assume that the recent adverse experience, which is much worse than the average experience since 2000, continues unabated into the future. Instead, we have struck a balance between the more moderate historical long-term cost trends and the higher trends observed more recently.

The required premium in the above chart is the premium that would need to be collected to sufficiently cover costs and expenses net of investment income and service fees. If premiums are kept at current rate levels, with only inflationary increases and growth in the number of vehicles in line with recent averages, we estimate this will result in a rate gap of over $1.1 billion in 2019.

The above results from our analysis make it clear that a re-design of the current Basic insurance product is required as the system is not performing well against any of the guiding principles. The adversarial nature of the system means claims take a long time to travel through the litigation process and a great deal of complexity is involved in claimants receiving benefits or treatment. Many additional costs are incurred through this process, resulting in an inefficient system that returns a low percentage of premiums to claimants as benefits. Minor injuries are being paid out at amounts nearing those received by non-minor injured claimants, particularly for pain and suffering, which is not only unfair to the non-minor injured claimants but to all drivers who are required to pay higher premiums to fund these growing payouts. Premiums are already on average the second highest among the Canadian provinces; further increases in the magnitude required will make premiums even more expensive. Together, these issues result in an unsustainable product that requires change.

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6.4 Investment

ICBC's primary investment objectives are to maintain sufficient assets to support its current and future insurance obligations and deliver an investment return to minimize insurance costs to customers. These two objectives are innately in conflict with one another and must be balanced when creating a portfolio investment strategy. In accordance with these objectives, ICBC manages a portfolio with a substantial weighting to high-quality fixed income assets, consistent with established risk tolerances and smaller allocations to equity, real estate, mortgages and high-yield bond investments to generate target investment returns.

Currently, ICBC's asset base primarily consists of customer-paid insurance premiums, which are invested to offset future claims liabilities and generate an additional investment return to reduce customer insurance rates. ICBC also invests the capital that it holds in case it does not collect enough premium to cover costs. ICBC manages the Basic and Optional business assets on a combined basis due to the similarity of the businesses' claims liabilities.

6.4.1 Impact on Basic premium rates

ICBC's investment income impacts the Basic product premium rate through its impact on the Basic business's net income and consequently its capital. For example, a shift in allocation from low yielding investment grade bond to a higher yielding asset class may potentially increase investment income but may also require additional capital to support the higher investment risk.

It should be noted that for all property and casualty insurers there are two sources of investment income associated with Basic product premiums:

(i) Investment income on Basic capital supporting the business
(ii) Investment income on policyholder supplied funds (i.e., premium paid).

Investment income on Basic product capital can be estimated based on the return expectations of the assets held by ICBC. While the investment income on policyholder supplied funds is estimated by assuming an investment mix consistent with *ICBC's Statement of Investment Policy and Procedures* and a forecasted expected yield, above risk-free, based on the risk premium generated by each asset class.

In order to conduct a review of ICBC's investment performance relative to other major Canadian and American insurers, EY reviewed data obtained by MSA Research Inc. (MSA) and from the National Association of Insurance Commissioners (NAIC) financial statement data. MSA's database contains a significant amount of financial data related to insurers' invested assets and historical yields, and we have used this data to compare ICBC's historical performance against the average of the Canadian property and casualty industry as well as selected leading Canadian insurers. The NAIC data was used to complete a similar analysis against American insurers — specifically, comparisons of investment income, investment return (including changes in accumulated other comprehensive income), risk-adjusted investment performance, and capital required to support invested assets.

Lastly, a high-level review of ICBC's investment management structure and processes was completed against approaches used by leading insurers. A comprehensive summary of this work can be found in Appendix 2.

The key observations from our review with suggested actions are as follows:

- Management and the board have in place a process to periodically review the investment asset mix and generally consider assets that are appropriate for an insurer such as ICBC given its liability profile.
- Over the previous five years (2012–2016), ICBC generated approximately $3.4 billion of investment income, but lost approximately $2.2 billion through its underwriting activities. Investment income, therefore, is an important element in controlling insurance rates.
- ICBC outperformed the total property and casualty industry average and ranked 3rd on investment performance over the 2012–2016 period.
- ICBC ranked 6th on the Sharpe Ratio (which measures risk-adjusted return) over the 2012–2016 period. This reflects the higher-than-average risk profile associated with the ICBC portfolio.
- The MCT required capital for market and credit risk associated with ICBC's investment portfolio is significant.

In summary, ICBC holds one of the most well-diversified investment portfolios among the peer group and has been ahead of its peers in growing its allocation to commercial mortgages, real estate and high-yield bonds to combat steadily declining bond yields. We believe that ICBC's investment management process as currently structured and formalized could be further improved by increasing in-house capabilities in optimizing the strategic asset allocation, modelling investment risks and managing investment performance. However, it is important to note that the implementation of these initiatives is unlikely to generate material differences that would lessen the current gap in Basic premiums.

Management should review whether the current asset mix is appropriate given that ICBC's current capital is below its target.

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6.5 Capital

ICBC has set internal capital targets for managing both its Basic and Optional products, and as at December 31, 2016, targets are not being met. The capital deficiency in the Basic product is in excess of $400 million, and as a result of the growing rate deficiency explained earlier in this section, funds have been transferred from ICBC's Optional product to increase the capital position of the Basic product. In the Optional product, the deficiency is just over $700 million, for a combined deficiency in excess of $1.1 billion.

6.5.1 Capital targets – Basic

The Basic Capital Management Plan (Basic CMP) is designed to achieve stability in rates while maintaining the stable financial condition of the Basic insurance product. ICBC is required by the BC Utilities Commission (BCUC) to maintain capital in excess of that required to achieve a 100% Minimum Capital Test[24] (MCT) ratio. ICBC's target MCT ratio is 145%.

Regulatory capital standards as set by OSFI's MCT guideline are intended to provide policyholders with assurance, at a reasonably high level, that their insurance provider will be able to pay their claims as they come due. As such, insurers who follow these standards are holding assets significantly in excess of liabilities to provide for unexpected risks; as an example, insurers who invest in equities must hold capital equal to 30% of the value of those equities, at the 100% MCT level (if operating at a 200% MCT level, the capital would be 60% of the value of equities).

Other auto monopoly government schemes in Canada have a target MCT ratio of 100% (i.e., Manitoba and Saskatchewan), while similar schemes in Australia for auto and workers' compensation have targets that are no higher than an MCT of 100% (e.g., Victoria, South Australia, NSW). ICBC's capital target is high relative to these schemes.

As a government-owned monopoly insurer of the Basic product, ICBC is not required to adhere to OSFI's MCT guidelines. Reasons government-owned monopoly insurers would consider having lower capital target levels than would be required for private insurers include the following:

- Capital surplus above target levels may be put to better use by the government for the broader benefit of the Province rather than being tied-up in investment assets of the insurer.
- Whereas a sole private insurer would face bankruptcy in the event of insufficient capital, leaving policyholders and claimants at risk of not being fully indemnified for their losses, a government insurer is implicitly backed by the government, meaning this risk is minimal in comparison.
- Increased capital levels require higher premiums auto owners need to pay, and it can be argued that in light of the above two points there is no need to have higher premiums.

[24] The MCT ratio is set by the Office of the Superintendent of Financial Institutions (OSFI) and is equal to the ratio of capital available to capital required. Capital required is estimated using a series of factors applied to certain risk elements associated with the business, such as underwriting risk, market risk or operational risk.

As at December 31, 2016, ICBC's Basic MCT ratio was 114.1%, which, as illustrated below, represents a gap of approximately $435 million against its target ratio of 145%.

Table 20: Basic product capital current capital position

($m)	Basic product	Dec 31, 2016
(1)	Capital available	1,607
(2)	Capital required	1,409
(3) = (1) / (2)	Minimum capital ratio	114%
(4)	Target capital ratio	145%
(5) = (2) x (4)	Capital required implied by target	2,043
(6) = (1) – (5)	Estimated capital surplus/(deficiency) to target	(435)

In light of the above discussion, ICBC, in conjunction with the government, should consider a lower target capital position for the Basic product more in line with other jurisdictions. Consideration should also be given to whether the OSFI MCT ratio is the appropriate framework for setting capital for the Basic product.

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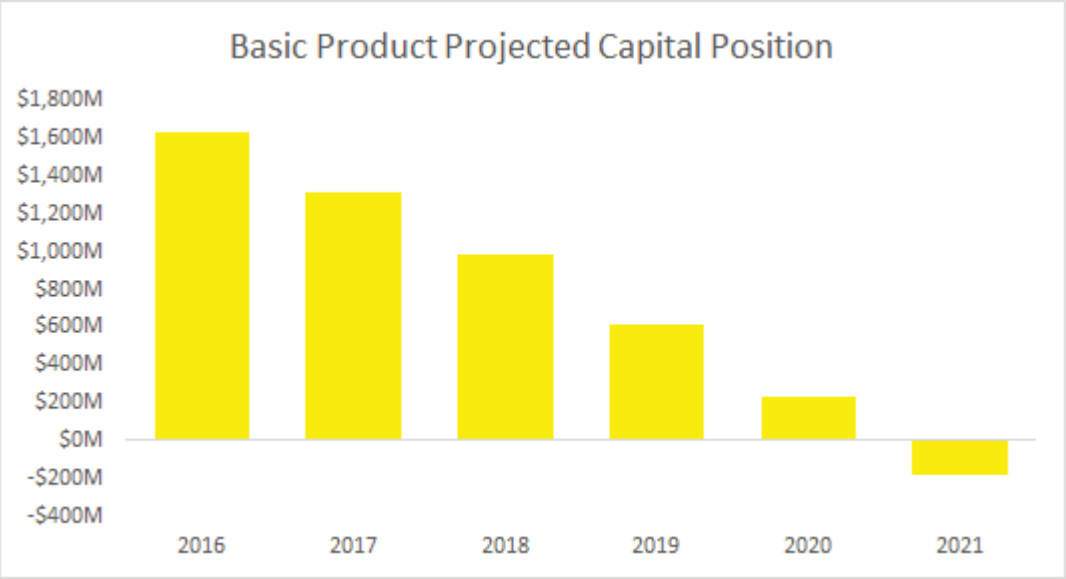
6.5.2 Projected capital position of ICBC's Basic product

The following chart projects the capital position of ICBC's Basic product over the next five years. The projection is consistent with the projection of the required premium set out earlier in this section; that is, it assumes premium rate increases at CPI inflation (i.e., 2% per annum), increase in number of autos insured consistent with recent trends and claims cost increases consistent with the adopted trends for required premium rate assessment.

Chart 29: Projected capital position of ICBC's Basic product



The above chart shows that the capital position for the Basic product deteriorates each year, and in 2021, it is projected than ICBC's Basic product will have a negative capital position (i.e., total liabilities will exceed assets). In the above projection, we have assumed no further transfer of retained earnings from the Optional product given this product is now well below its capital targets (see next section) and needs to retain future profits to restore its capital position.

6.5.3 Capital targets – optional

ICBC competes with private insurers, who are predominantly regulated by OSFI, for the provision of optional products to BC consumers, and maintaining a level playing field with private insurer's legislation requires ICBC to maintain a minimum level of capital. An OSFI-based MCT capital framework, therefore, is appropriate for determining required capital levels for ICBC's participation in this competitive market.

ICBC's target MCT ratio is 250% for optional business. As at December 31, 2016, ICBC's Optional MCT ratio was 133.1%, which, as illustrated below, represents a gap of approximately $715 million against its target ratio of 250%.

Table 21: Optional product current capital position

($m)	Optional product	Dec 31, 2016
(1)	Capital available	814
(2)	Capital required	611
(3) = (1) / (2)	Minimum capital ratio	133%
(4)	Target capital ratio	250%
(5) = (2) x (4)	Capital required Implied by target	1,528
(6) = (1) – (5)	Estimated capital surplus/(deficiency) to target	(715)

Illustrated below are the historical transfer of retained earnings from the Optional product to the Basic product and the dividends paid from the Optional product to the province.

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Table 22: Transfer of retained earnings from Optional to Basic product and excess Optional capital transfers to province (the "dividends").

($m)	Net income/(loss) for the year before income transfer			Transfer of retained earnings from Optional to Basic[25]	Excess Optional capital transfer to province
Year	Basic	Optional	Total		
2006	$138	$212	$350	$100	$-
2007	$290	$352	$642	$-	$-
2008	$176	$322	$497	$-	$-
2009	$175	$387	$563	$-	$-
2010	$56	$316	$372	$-	$576
2011	($188)	$328	$140	$-	$101
2012	($133)	$362	$229	$373	$-
2013	$3	$365	$368	$113	$237
2014	$87	$285	$372	$-	$139
2015	($257)	$387	$131	$-	$138
2016[26]	($280)	($253)	($533)	$622	$-
Total	$66	$3,066	$3,132	$1,208	$1,191

The Optional product has been profitable historically. It has been able to i) make transfers to Basic to increase Basic's capital position and ii) transfer funds (commonly referred to as the "dividend") to the province while meeting its capital targets. However, the optional product fell materially below target in 2016 and incurred a loss of $253m. The availability of optional capital in the future to offset losses from Basic insurance will be dependent on a return to profitability for the Optional product.

While ICBC's Basic target capital level may warrant review, the corporation is currently in a state of significant capital deficiency relative to its target levels, showing overall capital deficiency in excess of $1.1 billion in total for both products.

[25] Prior to 2006, there were transfers from Optional to Basic in excess of $500m, resulting in life-to-date transfers of approximately $1.7b.
[26] 2016 financial results not yet released.

7. Some policy considerations

Having analyzed the current BC scheme performance against the government's review objectives and set some guiding principles for assessing various different product options, we have outlined below some of the specific public policy issues that need to be considered by the BC government in light of potential reform options. We set out below some of the key public policy considerations.

There are some public policy matters that the BC government has already determined, namely that the BC government intends to maintain public ownership of ICBC and to work within the current model in order to keep Basic automotive insurance as affordable as possible for British Columbians.

7.1 Affordability of premiums

As the Basic product is compulsory for BC auto owners, the affordability of premiums is a key issue as customers do not have a choice to remain uninsured if they cannot afford the premium.

The level of premiums paid by vehicle owners determines the amount of money or premium pool that is available for payment to injured people in auto accidents for loss of wages, medical and other expenses and compensation. The pool of available premiums must also cover the cost of delivering those benefits (i.e., ICBC expenses, legal and other costs of delivery) to claimants.

Arguably one, if not the most important, public policy issue is to decide the appropriate balance between premium affordability and the level of compensation and benefits available for a bodily injury, while recognizing that property damage insurance cover impacts premium affordability. As we have noted in the review of Canadian and international jurisdictions in Section 5, there is a wide range of views as to what represents an acceptable level. For bodily injury, the affordability of premiums has been deemed by governments to be as low as 25% of weekly wage levels in some countries, while in other countries and some Canadian provinces (including BC), it is as high as around 100%.

There is no right or wrong level, and everyone will have a different view on an appropriate level of premium affordability. In deciding on an appropriate level, the matters that the BC government can consider include, but are not limited to, the following:

- The impact on the BC economy. The greater the premium paid, the lower the amount auto owners and consumers have to spend on other goods and services. What level of premium is appropriate to assist the BC economy in achieving its growth and social objectives?
- What level of premium will make the cost of living in BC more or less attractive for people to consider living in BC or another province or for businesses to set up in BC? If premiums are too high, the cost of living for BC citizens may be considered to be too high, and it may play a part in them moving to another province.
- If premiums are too high, the proportion of auto owners who choose not to take out insurance coverage will increase, as is the experience in many other provinces and countries internationally. Higher proportions of uninsured autos places a greater financial burden on the insured auto owners.

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7.2 Proportion of benefits/compensation paid to minor versus non-minor injuries

Whatever the level of premiums, there is a finite pool of money available for claims and costs of delivering benefits and compensation to claimants. How that is split between minor and non-minor injuries is an important public policy consideration.

As discussed in Section 5, many bodily injury schemes in Canada and around the world have come under financial stress due to substantial cost increases for minor injury claims. Currently, BC is in that position. It is almost universally the case that governments have reformed bodily injury insurance products when the proportion of the finite pool of money going to minor injury claims has been out of proportion to that for non-minor injuries and inconsistent with social and economic expectations. In BC, the proportion of premiums going to minor claims is almost 60% compared to 30% in 2000, with the former figure being much higher than that observed in stable and low premium schemes.

There is a finite limit to the level of premiums (i.e., affordability), and so the question becomes, what percentage of claims costs should be paid to minor claims? Many governments have taken the policy decision not to reduce the benefits paid to non-minor injuries to any material extent and to target reductions in benefits to minor injuries; this is a key policy issue and a social policy outcome the government needs to consider.

7.3 Litigation-based lump-sum models versus care-based model

There is significant debate around whether a litigation-based lump-sum model or care-based model presents the best way of supporting injured claimants and delivering benefits and compensation to injured road users, particularly whether all people should be covered and whether fault is the best way to ration and allocate the resources of the scheme.

Proponents of litigation-based models (such as the one operating today in BC) believe that they:

- Provide an incentive for people to drive safely;
- Provide greater flexibility to deal with individual and unique claims;
- Are more adaptable to changing legal and compensation environments;
- Provide fairness, as someone who injures another person is deemed responsible; and
- May allow for an injured person to negotiate for greater benefits.

Proponents of care-based schemes (such as those operating in Manitoba, Saskatchewan and New Zealand) believe that they:

- Provide simpler, faster and more predictable paths for compensation;
- Do not unduly punish an injured driver for a momentary lapse in judgment;
- Provide benefits that are not reliant on the quality of representation and argument;

- Provide a fairer proportion of scheme funds going to the injured;
- Improve health outcomes, as needing to prove fault delays treatment and compensation;
- Have a greater focus on effective medical treatments for a faster return to function; and
- Are generally cheaper to deliver benefits to claimants than litigation-based models.

Litigation-based lump-sum models pay once-only lump sums. Some people argue that lump sums create incentives to exaggerate claims to maximize payments (and for insurers to negotiate equally hard to keep payments down).

Recipients of lump sums also need to manage the lump sum for the rest of their life to ensure they have ongoing access to support. This means they are exposed to fluctuations in economic markets, which may see the value of their investments fall.

Recipients of lump sums also need to avoid the temptation to use the lump sum for purposes unrelated to their injury. When the lump sum runs out, the injured person may be left to fend for themselves, or end up back on publicly funded support, eroding the purpose of insurance.

Another aspect is the wide variation in lump-sum settlements. Injuries, even when distinctly similar in nature, often attract disparate amounts of compensation. For example, compensation for minor injuries such as low-level whiplash, sprain or moderate bruising may range from $10,000 to $120,000.

Care-based models are not without their shortcomings. There are numerous examples of care-based schemes that have failed to deliver stable claim costs as their benefits are too generous and act as a disincentive for claimants to return to their pre-accident lives. This is exacerbated where poor claims management systems exist or where benefit structures are overly complex. Examples include South Australia and Ontario.

In BC and in many other schemes in Canada and around the world, there is a mix of both litigation- and care-based models. In BC, the benefit mix is more weighted to a litigation-based model, while in other schemes in Canada (e.g., Ontario) and overseas (e.g., Victoria and the 2017 scheme in NSW, Australia) the model is more weighted towards a care-based model (e.g., with benefit components such as ongoing treatments). While there are a few purely litigation-based models (e.g., the UK) and a few more purely care-based models (e.g., Manitoba, Saskatchewan and New Zealand), most schemes are a mix of the two models.

The key policy consideration is deciding what mix between the two models is appropriate for BC.

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7.4 Exploiting weaknesses in the system

Different designs for bodily injury products can encourage people to exploit weaknesses in the system design. This can include "soft fraud" such as the embellishment or exaggeration of injuries by claimants (and occasionally "hard fraud" such as staged or fictitious crashes) as the benefits paid often depend upon an assessment of the severity of the injury. This can be hard to prove or disprove.

Litigation-based lump-sum models may also encourage unacceptable behaviours by service providers, who may assist these claimants to build a case. Proponents of care-based models argue that lump sums provide incentives for claimants to submit a claim and or exaggerate their injuries. A different product design may reduce or remove the opportunity or incentives to abuse the system, which will ultimately result in reduced premiums for auto owners. Two good case studies are the NSW (Australia) and UK schemes where governments have set up fraud task forces to tackle hard and soft fraud. In NSW in recent months, the police fraud task force has made a number of arrests and had successful prosecutions, with operations ongoing. The NSW task force has targeted claimants, lawyers and medical practitioners.

Care-based models are not immune to exploitation by service providers (e.g., medical and allied health) who can over-service and over-bill for services if the management of the product is not adequate. Care-based scheme insurers and regulators are generally focused on tackling these activities.

All system designs are vulnerable to misuse by claimants and service providers alike. Careful design is imperative and must be supported by adequate claims management and monitoring processes. Any weaknesses in design or operation will be exploited to the advantage of claimants and service providers.

7.5 Product choice

With the need to moderate lump-sum payments for injuries (especially minor injuries) to address the current financial stress in the bodily injury scheme, the government could consider requiring insurers to offer policyholders optional "top-up" coverage to replace any reduction in litigated claim entitlement. Similar provisions exist in other schemes in Canada (Saskatchewan) and in the US (Pennsylvania). The details of the design would need to be explored. The "top-up" coverage would be offered as part of the ICBC's Optional product and would be open to competition.

8. Potential reform options

8.1 Road safety solutions

Preventing accidents on BC's roads will reduce the tragic human consequences of injuries and loss of life, reduce the number of claims being filed, and save hundreds of millions of dollars.

This report recognizes that many road safety programs, enforcement technologies, laws and penalties have been successfully implemented in BC over the past decades, resulting in improvements in the number of accidents and fatalities occurring on BC roads. While the overall BC road accident trend over the past decade is positive, the recently observed 23% upswing in crash rates needs to be addressed. In BC, as in many other jurisdictions, the top contributing factors in accidents involving a death or serious injury are speed, distractions and impairment – accounting for 84% of all road fatalities in BC in 2015.

An analysis of initiatives in global jurisdictions with leading road safety performance, such as Australia, New Zealand, the UK and other European countries, highlighted a number of road safety initiatives (some of which are already being deployed in BC today) that, within the next three to five years, could save the system over $250m annually through reductions in the number and severity of accidents, and by providing additional revenue from those engaged in high-risk driving behaviours.

It is further recognized that there is no one silver bullet in terms of road safety initiatives that will solve the problems on BC roads. It requires a systemic approach to address speed, distracted driving and impairment. Experience around the world indicates that in order to make sustainable changes in driver behavior, the three pillars of penalties, public awareness and enforcement must be aligned.

Table 23: Highlighted road safety initiatives could save the system over $ 250m annually within the next three to five years

	Road safety initiative	Annual contribution
Speed	✓ Double the number of intersection cameras and increase activation to 100%* ✓ Automated speed enforcement cameras at high-risk sites ✓ Variable speed limits and point-to-point speed systems	~ $150m
Distracted	✓ Increase the number of Integrated Road Safety Unit (IRSU) officers by 100 FTEs ✓ "Safe Work" programs (corporate policy and practices) ✓ Technology solutions and innovations ✓ Road infrastructure countermeasures, e.g., rumble strips	~ $100m
Impaired	✓ Increase the number of IRSU officers by 100 FTEs (assign to distracted driving) ✓ Review current penalties to assess current effectiveness	~ $20m-$30m

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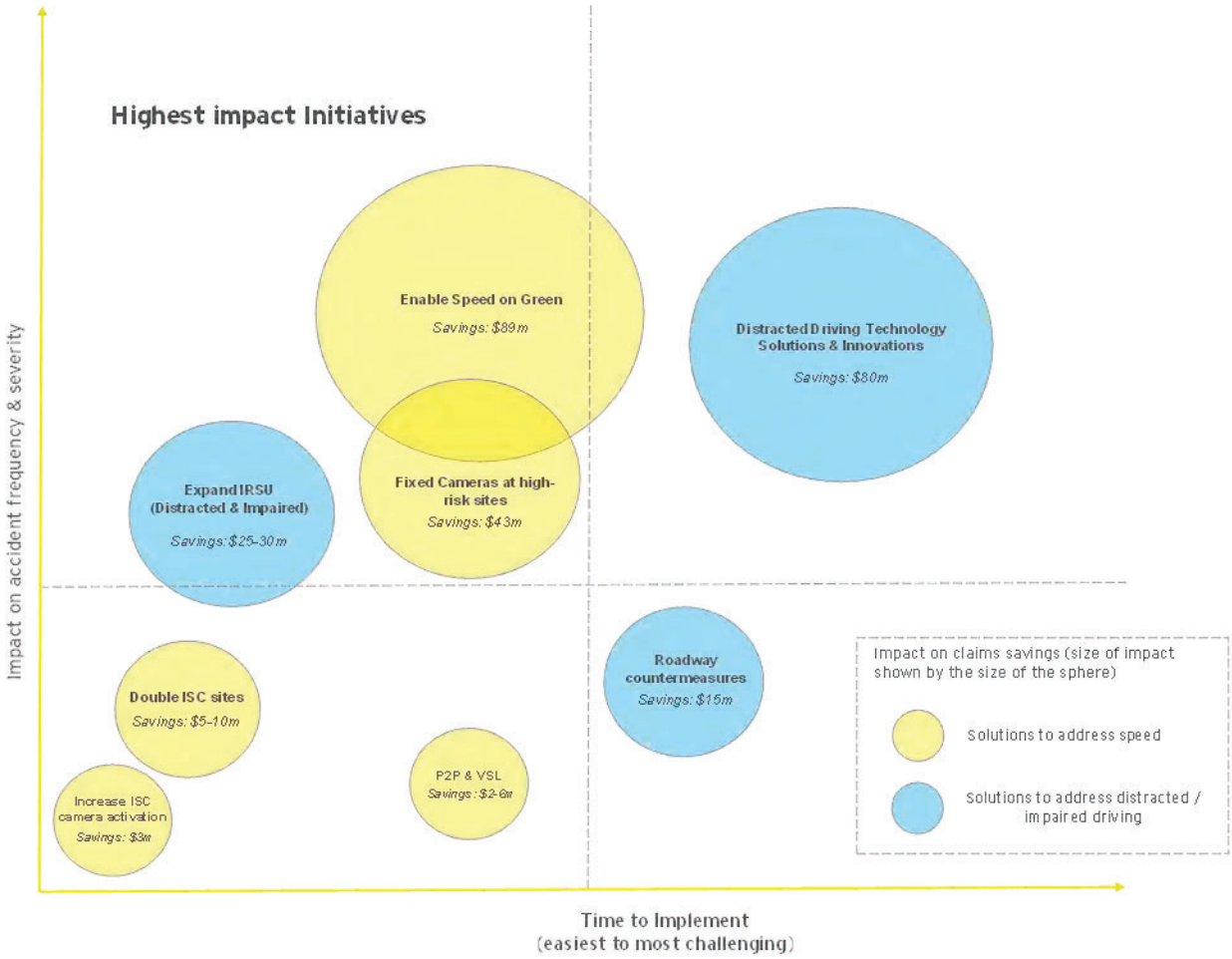
8.1.1 Potential sequencing for solutions

A number of solution considerations are set out over the following pages. These can be implemented in full for a higher impact on claim costs, or as a partial set, recognizing that the latter will require greater contribution from product reform and other initiatives to address the overall rate gap and trend. The chart below describes a potential sequencing of solutions for speeding, as well as distracted and impaired driving, showing both potential impact to claim costs and time to implement (easiest to most challenging).



8.1.2 Three pillars in addressing road safety

It is typical for road safety programs to support the successful implementation of new and ongoing initiatives with the three key pillars of penalties, public awareness and enforcement.

Penalties

Penalties are a key factor to any modern day road safety program. In Europe, where leading countries demonstrate some of the lowest accident and fatality rates in the world, 21 of the 27 EU member states had a demerit point system in place in 2012[27]. The effectiveness of penalty point systems has been extensively documented, with studies showing an initial impact of a 15% to 20% reduction in crashes, fatalities and injuries (with maximum effect over the first 12–18 months). While demerit penalties are an effective tool for adapting driver behaviour, strong and continuous enforcement combined with ongoing awareness campaigns is required to deliver positive impacts on road safety.

Public awareness

Road safety campaigns are widely undertaken to target and influence desired driver behaviors and instill long-term societal change towards safe driving. A recent analysis of 228 international studies conducted in 14 European countries over the last 30 years has shown that public awareness campaigns had the following effects on driver behaviours[28]:

- Reduced the number of road accidents by 9%
- Increased seatbelt use by 25%
- Reduced speeding by 16%

The duration of the campaign is directly correlated with its effectiveness. Thus, campaigns such as drink driving and use of seatbelts need to be delivered over a sustained period to keep issues at the top of the public's mind.

Enforcement

The success of any road safety program relies on the premise that road rules are only obeyed when drivers believe that not obeying them will result in unwanted outcomes. Thus, the perceived likelihood of being caught and penalized for disobeying road rules should be high for any road safety initiative.

A review of all violation tickets and sanctions issued by all police agencies in BC, as reported in the Enhanced Traffic Enforcement Program 2015 Annual Report, shows there has been a significant decrease in tickets issued over the past three years for speeding and distracted and impaired driving (those contributing to 84% of fatalities on BC roads).

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[27] (BestPoint, 2012)
[28] (Traffic Injury Research Foundation, 2015)

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Table 24: Summary of tickets and violations issued

	Speeding		Distracted driving		Impaired driving			Total	
Year	Tickets issued	Fatal victims	Tickets issued	Fatal victims	Issued sanctions	Criminal Code charges	Fatal victims	**Tickets issued**	**Fatal victims**
2013	184,000	77	66,000	77	30,000	860	64	**280,860**	**218**
2014	176,000	81	66,000	66	28,000	730	64	**270,730**	**211**
2015	164,000	88	59,000	88	25,000	530	69	**248,530**	**245**

Available data above indicates that the current levels of enforcement currently on BC roads are not sufficient to curb the growing levels of fatalities experienced today in BC.

- **Speeding:** Tickets issued decreased by over 10% from 184,000 to 164,000; fatalities due to speeding also increased by over 10%.
- **Distracted driving:** Tickets issued decreased by over 10% from 66,000 to 59,000; related fatalities increased by over 10%.
- **Impaired driving:** Issued sanctions and Criminal Code charges have decreased by approximately 17% and 38%, respectively; related fatalities increased by 8%.

In summary, the three pillar approach is foundational for ensuring a successful outcome of any prospective road safety initiative. Underperformance of one pillar potentially results in reduced outcomes and thus any of the solutions proposed below should be considered within the context of ensuring that there are appropriate penalties, public awareness campaigns and enforcement to provide the initiative with a foundation for success.

8.1.3 Speeding

Speeding in excess of posted limits is one of the key critical factors driving rising accident and fatality rates in the province; the speed at which a vehicle travels is an important determinant of injury. The following are solutions that should be considered for implementation:

Automated speed enforcement

An area of opportunity that would create immediate improvement in road safety is the expanded use of proven automated speed enforcement technologies, which are commonplace in other jurisdictions. The goal of automated enforcement is to significantly increase the perceived chances of being caught, creating a change in behaviour that will translate into a crash reduction at high-risk locations. An analysis of 28 automated speed enforcement studies across the globe found a consistent crash reduction effect — with most studies reporting reductions of 14% or greater at the camera sites and a halo effect of additional benefit to adjacent roadways.[29]

Current state

Sixty percent of accidents on BC roads happen at intersections. BC Intersection Safety Camera (ISC) program was introduced in 1999 as a means to change red light running behaviour at high-risk intersections and prevent crashes, reduce injuries and save lives. Operated as a partnership between ICBC, the provincial government and the RCMP, the program was updated and expanded in 2011 to provide 140 digital cameras permanently located at the highest-risk intersections. In BC, there are no speed cameras positioned on any major or minor roads, and speed enforcement is not provided under BC's ISC program.

The lack of speed enforcement is a cause of concern in BC, as analysis of 2011 and 2012 speed data recorded at 140 intersection safety camera sites found that of the 1.1 billion vehicles that passed those sites over the two-year period, 1.1 million were travelling at an excessive speed, defined as 40 km/h or more than the posted speed.

Conclusively, BC's current speed safety program could be further improved with the implementation of a comprehensive automated enforcement program that would reduce claims costs via the reduction of accidents and fatalities in BC.

Leading practices

Speed cameras are heavily deployed in Australia, the UK and Japan, with the UK currently having approximately 5,000 speed checking units, making it one of the largest programs in the world. A comprehensive study undertaken by RAC Foundation & Road Safety Analysis on the levels of occurrence of collisions before and after average speed camera (ASC) systems' installations in the UK found:

- A 36.4% reduction in the mean rate of fatal and serious collisions (FSC) after the system's installation; and
- A 16% reduction in the mean rate of personal injury collisions (PIC) after the system's installation.

[29] (Cochrane Group, 2010)

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Further, in the state of Victoria, Australia, over 280 fixed speed cameras are deployed across the state's road network, the majority of which are deployed at intersections, but some are on key highways and other roads. Additionally, mobile cameras are operated at approximately 2,000 locations – in April 2017, there were approximately 1,750 reported cameras deployed across a subset of the 2,000 locations. Speed and red-light cameras were introduced on Victoria's roads in the late 1980s in recognition of the role they play in changing driver behaviour – encouraging drivers to slow down and obey traffic signals. Since then, the annual fatality rate has halved, in part due to cameras. In 2001–2002, Victoria introduced a package of speed enforcement initiatives including a 50% increase in mobile camera hours, a decrease in speeding tolerance, and the introduction of a 50 km/h urban speed limit. In 2009, the number of road fatalities fell below 300 for the first time (to 290) and in 2015 was recorded at 252.

Table 25: Comparison of the state of Victoria, Australia with the province of BC is provided below.

Stats	Victoria, Australia	BC, Canada
Number of registered vehicles	4.6m	3.2m
Population	5.8m (2013)	4.6m (2014)
Geographic area	238km^2	945km^2
Speed camera coverage	280 fixed cameras 1,750 mobile cameras	140 fixed cameras

Chart 30: Cameras across Victoria state road network

High-level state view of 2,000+ fixed and mobile cameras shows the proliferation of cameras located around the Greater Melbourne area (5 km map scale).

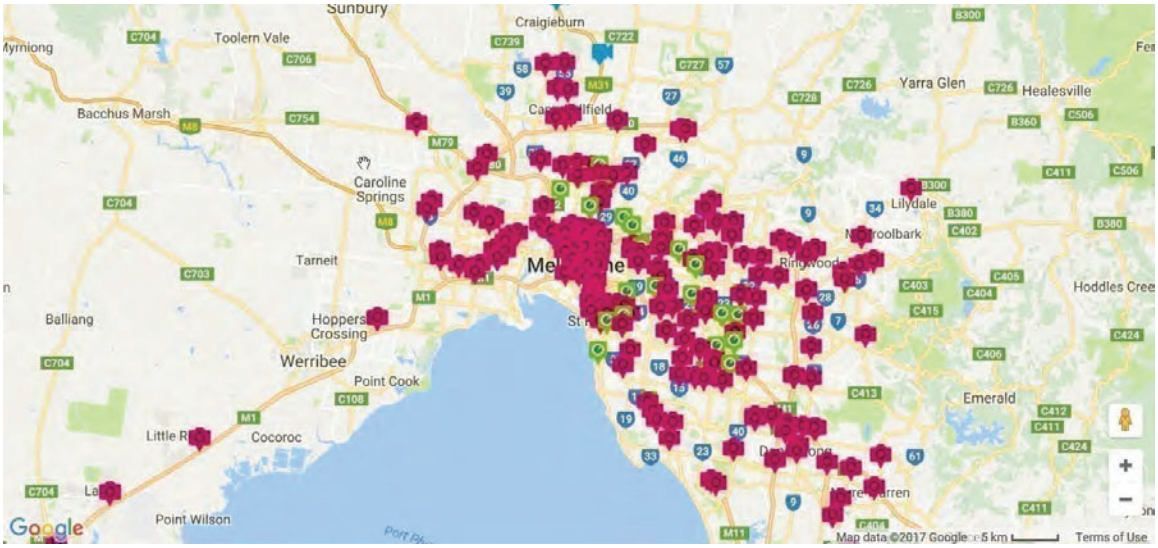
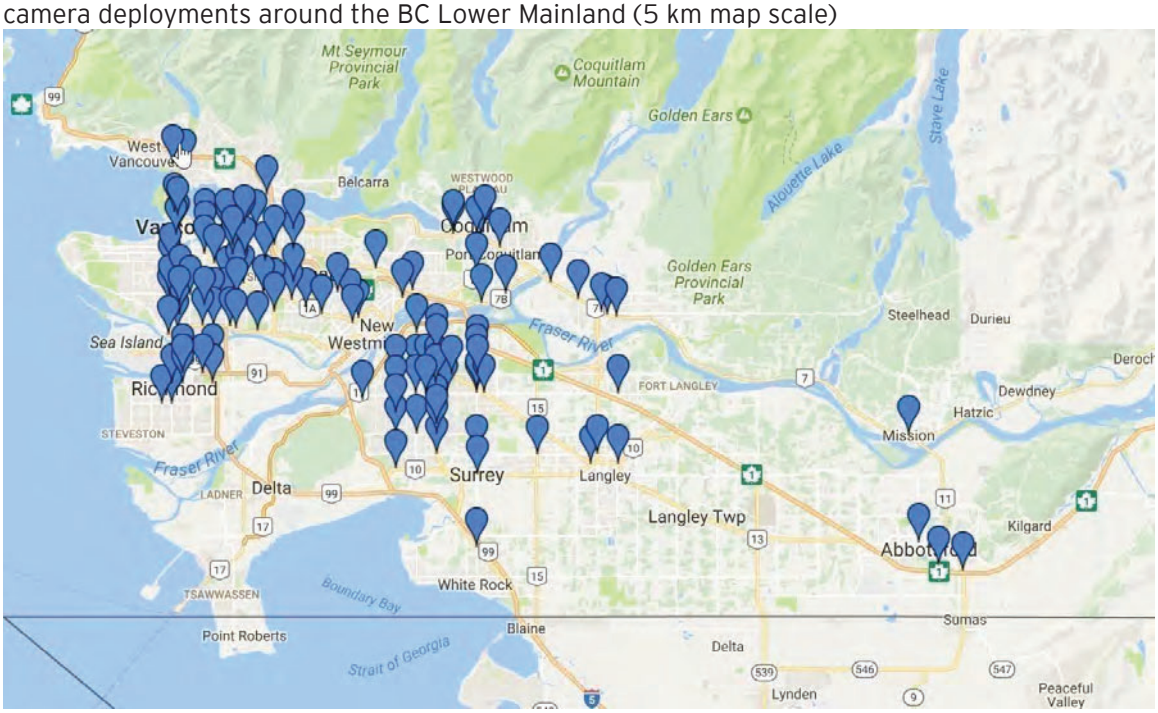


Chart 31: Cameras across BC road network

High-level state view of 140 fixed intersection cameras shows a much less dense concentration of camera deployments around the BC Lower Mainland (5 km map scale)



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The application of automated safety cameras across the UK and the state of Victoria, Australia, both of which are recognized globally as leaders in road safety, has had a strong effect in reducing accidents and fatalities across their respective road networks.

Solutions for consideration

In order to experience the same safety results as other higher-performing jurisdictions, the following road safety initiatives could be considered, with potential impact of $150 million annually within the next three to five years.

Table 26: Potential road safety initiatives

Speed solution	Purpose	Impact
Increase ISC camera activation from 25% to 100%	Modeling conducted on the ISC camera systems suggests that there is additional safety as well as monetary benefit from retention of incremental fines to offset costs associated with increasing ISC activation to 100%.	$3m
Expand ISC program to 240 units	A study by Monash University Accident Research Centre in 2011 evaluated the casualties at 77 signalized intersections across Victoria, Australia and noted the following: ▸ 26% reduction in accidents ▸ 17 fewer fatal crashes a year ▸ 39 fewer minor injury crashes Intersection cameras are an effective method of reducing accident and fatalities, thus resulting in claims savings. Modelling suggests that if BC were to double the current ISC program to 240 units based on a site review of high-risk intersections across the province, it would result in a material annual net benefit.	$13.5m
Enable speed on green	Currently BC's ISC program does not have the infrastructure to capture and prosecute speeding violations on a green light. Intersections are where the majority of accidents occur within the province. The introduction of speed on green at the high-risk ISC sites could reduce the frequency of accidents by 14%–25% and the severity of the accidents by 11%–45%. Thus, modifying existing cameras to allow them to capture speed on green would result in a material net benefit due to increased safety and significant claims cost savings.	$89m

Speed solution	Purpose	Impact
Fixed cameras	Currently, BC's speed program does not have the automated infrastructure present to measure and enforce speed limits in identified high-risk roads in BC. The introduction of automated fixed/mobile cameras at high-risk sites could reduce the frequency of accidents by 14%–25% and the severity of the accidents by 11%–45%, resulting in significant claims savings.	$43m
Point-to-point systems (P2P)	Evaluations conducted in the UK suggest that from two to eight years of pre- and post-implementation, there were decreasing trends in KSI (killed or serious injury) crashes after the installation of P2P of between 33% and 85%, with reductions in minor injury crashes also noted. In the context of BC, P2P is an effective tool in reducing both the number and severity of crashes, as well as smoothing traffic flows. Implementing P2P amongst BC's highest risk highways (Sea to Sky, Coquihalla Hwy, Hwy 99/Massey Tunnel, Hwy 1/Surrey) would result in moderate claims savings.	$1–$3m
Variable speed limits	Variable speed limits (VSL) have been trialed in the US and in Europe over the last decade with significant success. In the UK, the introduction of VSL led to significant traffic flow and safety benefits on key highways: the implementation of VSL on the M25 motorway around London led to a 15% reduction in serious injury accidents and a 30% reduction in the frequency of accidents. In the context of BC, given the global success of this safety initiative, expansion of the current three sites to include other risk areas would result in moderate claims savings.	$1–$3m

Other considerations

As noted above, the introduction of any road safety initiative must be considered alongside the three pillars. The following considerations would need to be addressed to ensure successful implementation:

- **Enforcement**: The most effective case studies have noted that 100% automated camera activation is critical to ensure that public-perceived chances of being caught are extremely high. Further, the ability to take a picture of the driver would also provide additional benefit as the ticket can be correctly issued to the driver of the vehicle without dispute. Thus, ensuring that a revised speed program is automated is essential in adapting driver behaviour and yielding significant claims savings.

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- **Awareness:** The implementation of any road safety program should be paired with a comprehensive awareness program to inform drivers of the risks of violations and to adapt behaviour. Thus, it is pivotal that the government consider with any proposed changes a road safety awareness campaign illustrating the risks and impacts of speeding to drivers.
- **Penalties**: EY recommends that the penalty amount be reviewed to apply Driver Risk Premium (DRP) to automated speed enforcement tickets. Under the current legislation, camera violation tickets are issued to the registered owner (MVA 83.1, as the driver cannot be identified in the images) and driver penalties are not applicable. Changing the legislation would enable the "registered owner" automated speed violation tickets to carry the same penalties as roadside tickets for excessive speeding. This change could potentially result in a greater crash reduction effect of the program due to the deterrent effect of the significantly increased penalties related to the DRP. The impact of applying DRP to automated enforcement of excessive speeding offences would be significant, as the charges appear on a driver's account for three years. Further, BC could implement a system that rewards safer driving, as demonstrated in Sweden and Canmore, Alberta, where drivers who obey the speed limit are entered into a prize lottery.

8.1.4 Impaired driving

The risk of accidents increases rapidly with alcohol consumption. Drivers with a blood alcohol concentration (BAC) between 20mg/100ml and 50mg/100ml have at least a three times greater risk of fatality in a crash. In 2015, impaired driving was responsible for 23% of all driving fatalities in BC down from 34% in 2010[30]. In order to further strengthen the current program, the following impaired driving initiatives could be considered in order to reduce claim costs via reducing the number and severity of accidents in BC:

Leading practices

Role of enforcement*:* The significance of enforcement in reducing impaired driving is unequivocal. Studies conducted in Australia have been profound, with the following outcomes observed in Western Australia:

- If the average number of random breath tests (RBTs) were doubled from 60,000 to 120,000 per month, at an annual cost of $4.5m, it would lead to a reduction of 23 accident-related traffic crashes (ARTC) per month, with a monthly claims saving of $2.9m. We have estimated the potential savings to BC to be in the region of $20–$30m per year.

Conclusively, as noted above within the discussion of the three pillars of road safety, the role of enforcement is critical in positively adapting driver behaviour to the risks of impaired driving as the greater the likelihood of being caught, the greater the deterrent to impaired driving behaviours.

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[30] The number of fatal victims where impairment by alcohol, drugs or medication was a contributing factor decreased from 127 in 2010 to 69 in 2015.

Penalties: In addition to enforcement, penalties also play a pivotal role in adapting impaired driving behaviours. For example, the state of Victoria implemented some of the toughest impaired driving penalties globally and has subsequently seen the proportion of drivers and motorcycle riders who lost their lives with a BAC greater than 0.05 decline from 38% in 1987 to 17% in 2015, with approximately 25 road deaths in 2015. Comparatively, BC currently experiences 66 deaths a year involving impaired driving, 164% more in comparison to the state of Victoria.

The following penalties are enforced for drivers found to be operating a vehicle with the following Blood Alcohol Level (BAC):

- **BAC 0.05–0.07:** Full license holders less than 26 years old are disqualified from driving for a six-month period and require an alcohol interlock for a minimum period of six months.
- **BAC 0.07–0.10:** All drivers are disqualified from driving for a six-month period and require alcohol interlock for a minimum period of six months.
- **BAC 0.10–0.15:** All drivers are disqualified from driving for 10–14 months and require an alcohol interlock for a minimum period of six months.

Contextually, in BC if a driver is caught impaired for the third time within a five-year period, they will only be disqualified from driving for approximately 30 days[31], a difference of 5–13 months in comparison to the state of Victoria.

Solutions for consideration

In order to further strengthen the current program, the following impaired driving initiatives should be considered in order to reduce claim costs via reducing the number and severity of accidents in BC:

- **Penalty review**: EY recommends that the government conduct a penalty review to assess the current effectiveness of the existing penalties and to assess the impact of a stricter model on reducing accidents and fatalities.
- **Enforcement:** Our modelling suggests that doubling the number of full-time officers within the Integrated Road Safety Unit (IRSU) would result in 1,916 additional impaired driving sanctions. This number could be tripled or quadrupled if the IRSU's mandate was solely to focus on impaired and distracted driving violations.
- **Awareness:** EY recommends that the government consider implementing, alongside a revised impaired driving prevention program, a comprehensive public awareness campaign illustrating the effects of drink driving on road safety and the risks and impacts violations would have on driver records.

[31] Refers to the automatic consequences associated with roadside screening results under Provincial legislation. Significantly greater penalties and a minimum one-year driving suspension pursuant to Section 259 of the Criminal Code of Canada following a Criminal Code Conviction for this offence.

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8.1.5 Distracted driving

Distracted driving studies show that phone usage increases the likelihood of getting into a crash by five times. In BC, police statistics illustrate that more than 25% of all car crash fatalities in the last five years were related to distracted driving, an average of 78 deaths per year. In order to further strengthen the current program, the following distracted driving initiatives could be considered in order to reduce claim costs via reducing the number and severity of accidents in BC:

Leading practices

The UK, US, Australia and other Canadian provinces with lower accident and fatality rates have initiated the following practices in relation to distracted driving:

- **School road safety programs (Australia):** These encourage and educate youth on the impact of distracted driving and encourage them to speak out against usage;
- **Stricter penalties (UK):** New drivers in the UK (up to two years after gaining a full license) lose their license if caught for distracted driving;
- **Roadway countermeasures (US):** Implementing edge line and centre line rumble strips. Research shows there is a 50% reduction of single vehicle run off road injury crashes on rural highways and 91% reduction on urban two-lane roads;
- **Employer programs (US):** Employers implement distracted driving policies and programs for their employees and tie them to employee conduct and performance; and
- **Creative enforcement (Canada):** Officers in Manitoba have disguised themselves in plain clothes to spot distracted drivers at intersections. Police in Ontario ride public transport (like the bus) to spot distracted drivers on the roads, while in British Columbia police have utilized hydraulic cranes ("cherry pickers") to catch people using their phones at intersections.

Solutions for consideration

In order to further strengthen the current program, EY highlights the following best practices that could be implemented to reduce claims costs:

- **Penalty review**: EY recommends that the government conduct a penalty review to assess the current effectiveness of the existing penalties and to assess whether a stricter model would reduce accidents and fatalities.
- **Enforcement**: The most effective case studies have noted that strong, creative enforcement is required to ensure that drivers recognize that they will be caught for non-compliance. Our modelling suggests that doubling the number of full-time officers within the IRSU would result in 6,450 additional distracted driving sanctions. This number could be tripled or quadrupled if the IRSU's mandate was solely to focus on impaired and distracted driving violations.
- **Awareness***:* EY recommends that the government consider, with the proposed changes above, a road safety program illustrating the effects of distracted driving and the risks and impacts violations would have on driver records.

Within the next three to five years, distracted driving initiatives could save the system $100m annually, demonstrated below:

Distracted driving solutions	Purpose	Impact
Technological solutions and innovations	Utilize and enforce existing and upcoming technological innovations to combat distracted driving	$80m
Roadway countermeasures	Implement road enhancements, e.g., rumble strips, to reduce crash rates	$15m
Expanded IRSU (additional enforcement)	Increase the current IRSU unit by 100 officers to increase presence across BC roads	$5m
	Total	**$100m**

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8.2 Product and policy

Even with measures to reduce road accident numbers, the number of claims per accident has been rising. This behaviour is driven by the fundamental structure of the auto insurance product in BC, and product changes are required in order to avoid significant rate increases on the Basic product.

Lump-sum settlements in the current system can act as incentives for persons injured in road accidents to decide to make a claim, possibly exaggerate their injuries and potentially get unnecessary medical treatments — evidenced by the cost of minor injuries now representing almost 60% of all bodily injury claim costs, up from about 30% in 2000. The latter figure is more consistent with the experience of stable and lower cost auto insurance schemes in Canada and internationally. Product reform should target these areas: restricting access to lump-sum awards for pain and suffering for minor injury claims and increasing the proportion of benefits received as accident benefits. Such changes should also see a reduction in the number of litigated claims, resulting in a reduction in legal costs and disbursements for the entire scheme.

Premiums currently collected by ICBC are not sufficient to cover claim costs and expenses, yet they are the second highest in Canada, and affordability by international standards is unfavourable. Basic premiums (excluding optional property damage coverage for your vehicle) are almost equivalent to a typical weekly wage in the province (about $920), which is much higher than other jurisdictions; for example, annual auto insurance premiums in Australia range from about 25%–40% of a typical weekly wage. Some Canadian provinces (e.g., New Brunswick, Alberta and Nova Scotia) have premiums that are between 50% and 70% of weekly earnings, but others (e.g., Ontario) exceed 100% of weekly wages.

8.2.1 Product change objectives

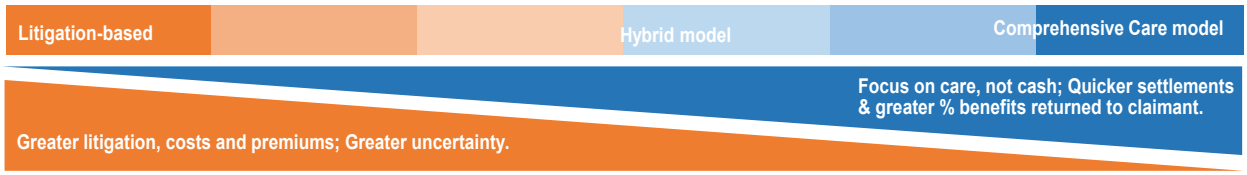
Product change can be effected in many different ways, and the scale of change will depend on the objective or desired outcome. To illustrate some potential outcomes, we have set out four illustrative objectives, which describe possible product changes that would simply close the Basic rate gap and trend gap, ranging toward more comprehensive product reforms that could reduce Basic premiums below current levels.

These four objectives are designed on a spectrum going from minor limitations to compensation for litigation-based claims under Objective 1, to essentially a care-based system under Objective 4. In simple terms, the way claimants receive their benefits changes from mostly a lump-sum method under Objective 1 to increasingly greater care benefits under each of the other objectives. It is important to note that while there are reductions in compensation for litigated claims, these are offset by increasing care benefits. In addition, there are fewer incentives for claimants and other scheme participants (legal and medical service providers) to exaggerate claims under a care-based system compared to a litigation-based system, and this reduces claim costs across the spectrum, enabling premium reductions.

For each objective described, access to lump-sum payments under the Basic product will have limitations compared to today (where it is basically unrestricted) for minor injury claims. It is proposed that policyholders under any of the different regimes discussed for British Columbia will have the option to buy back any new restrictions to litigated claims under their Optional insurance product. This means that drivers wishing to pay premiums reflective of the cost of the currently unrestricted

litigation-based model in BC will be able to maintain full access to their entitlement to claims against another driver that causes injury to them.

Chart 32: Spectrum of different auto insurance models, with features of litigation-based models on the left and care-based models on the right



The desired level of savings under each objective could be achieved in different ways, i.e., significantly limiting the awards available for one benefit type (e.g., pain and suffering) could achieve large savings, or the same level of savings could be achieved by a series of smaller changes on several benefit types or litigation process changes. We have illustrated one package of product changes that could achieve the savings required under each stated objective; however, alternative product changes could achieve the same result. For example, varying the level of caps applied to pain and suffering awards would achieve greater or lesser savings as required. System changes such as rules for court claim processes could similarly be made stronger/weaker to achieve greater/lesser savings.

8.2.2 Product change themes

Cost of minor injury claims

Bodily injury claim costs for minor injury claims are disproportionately high under the current BC system. Minor injuries are costing the system significantly more in total than non-minor (moderate and serious including catastrophic) bodily injury claims. Based on other jurisdictions in Canada and internationally, this acts as an indicator that the system is under financial stress and not performing as it should, and system reforms should aim to make minor injury claim awards more proportionate and fair relative to non-minor injured claimants.

The average award for pain and suffering received by minor injury claimants is approaching that received by non-minor injured claimants. A cap on pain and suffering for minor injury claims would help control the cost of minor injuries, with no impact to non-minor injured claimants and no restriction to claims for economic loss (e.g., wages and medical treatment) for minor or non-minor injuries. Different levels of caps could be set under each objective and would achieve savings through:

- Reductions in the number of minor injury claims;
- Reductions in the cost of pain and suffering awards for minor injury claims; and
- Reductions in legal costs including costs and disbursements.

Such caps have been introduced and effected more stable claim costs in the auto insurance systems in Alberta, New Brunswick and Nova Scotia. Similarly, auto insurance schemes worldwide have typically targeted minor injury soft-tissue claims when tackling deteriorating claim costs (e.g., the UK, France and many states in Australia).

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The effectiveness of any minor injury cap relies on the definition of what constitutes a minor injury and the robustness of that definition in any dispute event. Many jurisdictions use similar definitions for minor injuries, and this experience should be considered in setting a minor injury definition under these designs. We have used Alberta's definition for the purpose of costing changes, but similar results should emerge if we had used a minor injury definition from another jurisdiction. Regardless of the definition used, experience from other jurisdictions suggests that it should be regularly reviewed by government, and revised as needed to ensure the desired impact is being achieved.

Accident benefits

The level of Accident benefits provided today require many claimants to pay for care and treatment out of pocket unless a claim against another driver is pursued. This may act as an incentive to claimants to pursue a litigated claim rather than accessing the accident benefits they need quickly and efficiently (e.g., adequate medical costs and weekly wage replacements) in order to return to their pre-accident lives as soon as possible. Moreover, the most seriously injured at-fault claimants have no opportunity to recover amounts beyond the current limits, meaning the system is failing those policyholders and putting a burden on public health systems. Savings gained from applying caps to litigated awards such as pain and suffering for minor injury claims could be redistributed to increase accident benefits to more beneficial levels for all claimants. Another option is to restrict access to litigation just to loss of wages and pain and suffering benefits for all types of injuries, with medical treatment, rehabilitation, and care benefits paid purely as an accident benefit for life.

Claimants not accessing remedies at adequate levels to cover needs via litigation will see an increase in the total amount received in benefits, which includes at-fault drivers. For those accessing damages against an at-fault driver, there is no net increase in the cost of their claims as the increased accident benefits are offset by reductions to lump-sum payments for past and anticipated future care and medical treatment.

Legal costs

The current claim litigation process in BC is very adversarial. As a result, it is also very costly. There are multiple areas where improvements to the process could be made to help speed up the resolution of claims, reduce the complexity of resolving claims (especially for minor injuries), reduce the costs associated with resolving claims, including both legal costs and disbursements, and overall create a fairer balance between all parties through the process.

Claims management

Changes to benefits under the Basic product should be accompanied by appropriate claims management strategies to both manage and monitor claims experience. In particular, limiting the awards available under certain benefit types (e.g., pain and suffering awards for minor injuries) can put cost pressures on other benefits. (This is typically experienced in other jurisdictions following major scheme reforms.) The extent to which claims management processes need to change will vary by Objective.

8.2.3 Cost and premium estimates

Product design changes will impact behaviours of claimants and their representatives (mainly lawyers). How their behaviour changes is difficult to predict, but the experience of other schemes can be used to assess the potential impact. Two examples are illustrative:

- There are many schemes in Canada and internationally (e.g., Australia and the UK) where product design changes similar to the options explored below have resulted in a significant reduction in claim numbers
- Similar changes to those explored below have resulted in significant reductions in the proportion of legally represented claims in other schemes in Canada and internationally.

While we have assumed plausible reductions in claim numbers and legal representation in our work, other plausible assumptions could also be chosen. The uncertainty of the change in behaviours of claimants and their representatives introduces a significant amount of uncertainty into the cost estimates and consequently the extent to which product changes need to be varied to achieve the cost reduction objectives outlined later in this section.

8.2.4 Overview of objectives

By targeting benefit changes in the areas described above, increased levels of savings could be achieved across the objectives in the following areas:

Chart 33: Cost of key components under the current system compared to under each Objective

	Minor injury litigation claim costs	Non-minor injury litigation claim costs	Accident benefits	Legal costs (ICBC & plaintiff)	Estimated savings by 2019
Current state	$718m	$612m	$199m	$845m	
Objective 1	↓ 70%	↔ No change	↑ 38%	↓ 30%	**$770m**
Objective 2	↓ 84%	↔ No change	↑ 75%	↓ 35%	**$840m**
Objective 3	↓ 93%	↔ No change	↑ 126%	↓ 40%	**$875m**
Objective 4	↓ 90+%	↓ 90+%	↑ 490+%	↓ 90+%	**$1.4b**

Details of the product design options are set out below, including the cost and premium impact. We have not included the cost of implementation of the product design changes, which should be a one-off cost and relative to the annual cost savings should not be material.

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8.2.5 Objective 1: Reduce Basic rate gap and trend gap

As discussed earlier, Basic premiums are currently below the level required to cover claims and expenses net of investment income — this is the Basic rate gap. As the trends in claim costs continue to worsen, the Basic rate gap grows — this is the Basic trend gap. In order to achieve the goal of reducing the Basic rate gap and trend gap, measures such as the following could be taken:

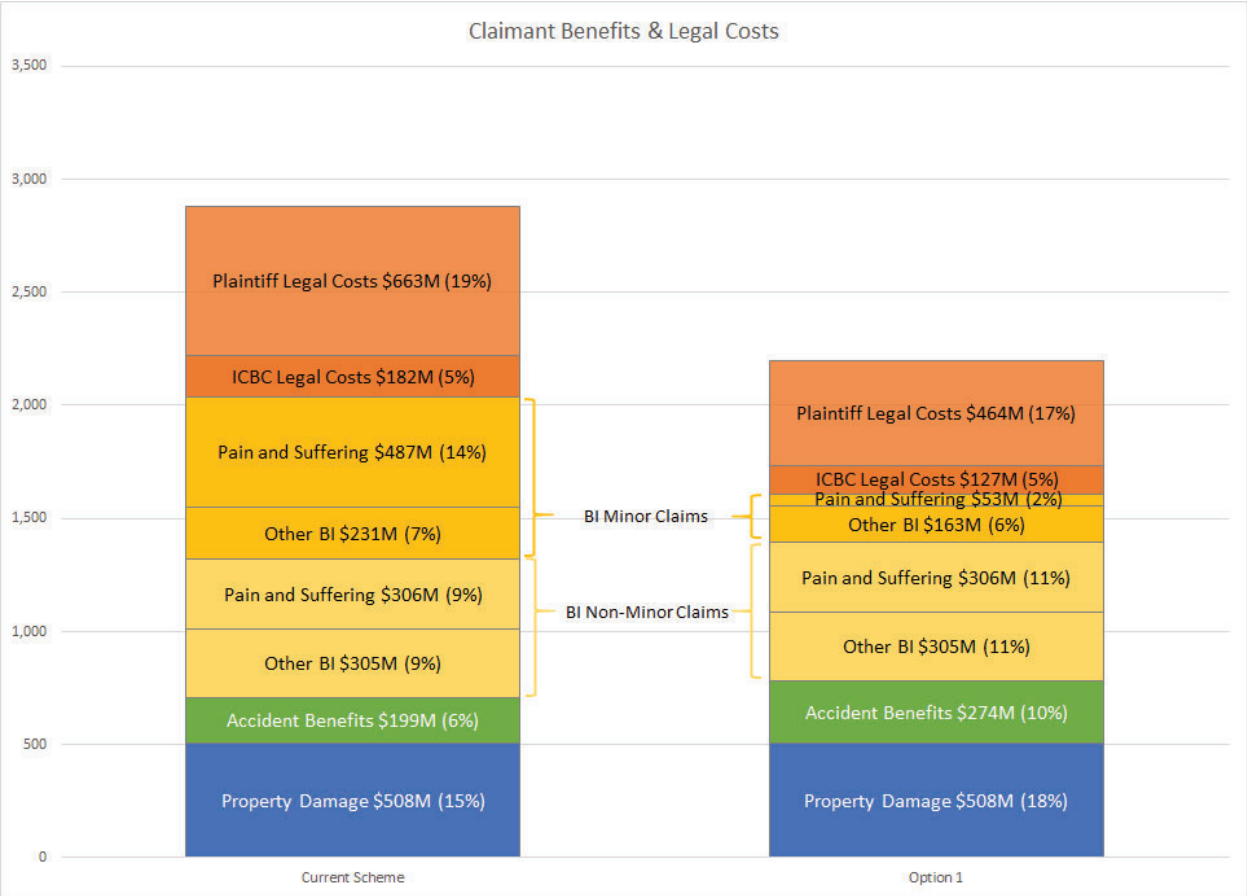
1) Introduce a cap in the range of $7,000 to $9,000 on pain and suffering for minor injury claims (annually indexed to inflation). No impact to non-minor (moderate and serious including catastrophic) injury claims.

2) Increase accident benefits by 100%. Doubling benefit levels would result in the weekly wage benefit limit increasing from $300 to $600 per week, and the current limit on medical payments of $150,000 increasing to $300,000 (all benefits annually indexed by inflation). ICBC remains being the second payer for loss of wages.

The above product changes could achieve estimated savings of $770 million — of sufficient magnitude to close the Basic rate gap and help control trends in future claim costs, but are not likely sufficient to limit long-term Basic insurance rate increases to the rate of inflation. As noted earlier in this section, these product changes are illustrative and other alternatives are available to achieve the cost savings targeted.

Key cost outcomes compared to the current state are shown in the chart below.

Chart 34: Breakdown of claim costs and expenses compared to current state (policy year 2016)



The above chart sets out the cost for policy year 2016 under the current product design and under the proposed product changes:

- The cost of litigated minor injury claims would reduce from $718m (or 21% of total claims costs) to $216m (8%), with the biggest reduction arising from the fall in pain and suffering awards;
- A reduction in legal costs from $845m (or 24% of total claims costs) to $591m (or 22% of total claims costs);
- An increase in the cost of accident benefits from $199m (or 6% of total claims costs) to $274m (or 10% of total claims costs);
- No change in the cost of non-minor injury claims; and
- There may also be a small reduction in ICBC claims handling costs, which are not included in the above reduction.

This objective could potentially solve for the Basic rate gap and trend gap. However, claim costs may continue to deteriorate, and it is likely that significant premium rate rises above inflation would be required in following years. Hence, this design is not expected to meet all of the review objectives.

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8.2.6 Objective 2: Basic premium increases in line with about 2% inflation for five years

Auto insurance claim costs tend to increase above the rate of inflation due to a combination of factors such as higher cost of new medical procedures/equipment, more expensive automobile parts and repair costs, and other medical, legal, judicial and social factors. Therefore, to keep premium increases in line with about 2% inflation for say five years, more limitations on litigation awards would be required to achieve this objective.

Possible measures could include:

1) Introduce a cap in the range of $5,000 to $7,000 on pain and suffering payments for minor injury claims (annually indexed to inflation). A lower cap on pain and suffering for minor injuries would bring greater cost control to the system and make holding premium increases to the rate of inflation more achievable. As under Objective 1, the cap would only apply for claimants with minor injuries — serious or catastrophically injured claimants would not be affected.

2) Increase accident benefits by 200%. With the additional savings from the lower cap on pain and suffering for minor injuries, accident benefits could be tripled. These enhancements would mean the weekly wage benefit limit could increase from $300 to $900 per week, and the current limit on medical payments of $150,000 could increase to $450,000 (all benefits annually indexed by inflation). ICBC remains being the second payer for loss of wages.

3) Introduce rules and regulations for the litigated claim process and introduce an alternative independent dispute resolution system. Examples of measures that could be introduced include the following:
   - Early reporting to the insurer of the intention to pursue a litigated claim (e.g. within one month of consulting a lawyer)
   - Duty of both parties to share documents and expert reports within tight time frames,
   - Duty of claimant and other parties to co-operate with requests for information and to be assessed by medical and other experts
   - Duty of insurer to provide details of decisions and information to claimant
   - Set up alternative dispute resolution service, which could be compulsory for both parties but with exemptions and access to court after process if no resolution achieved
   - Compulsory settlement conferences before proceeding to court process and mandatory settlement offers before proceeding to court process
   - No disbursements payable until insurer is notified of a claim demand or intention to sue
   - Cap on disbursements or cap on number of expert reports allowed for minor injuries
   - Cap on fees for individual disbursement costs (e.g., medico-legal)
   - Setting up a new independent service to address medical disputes

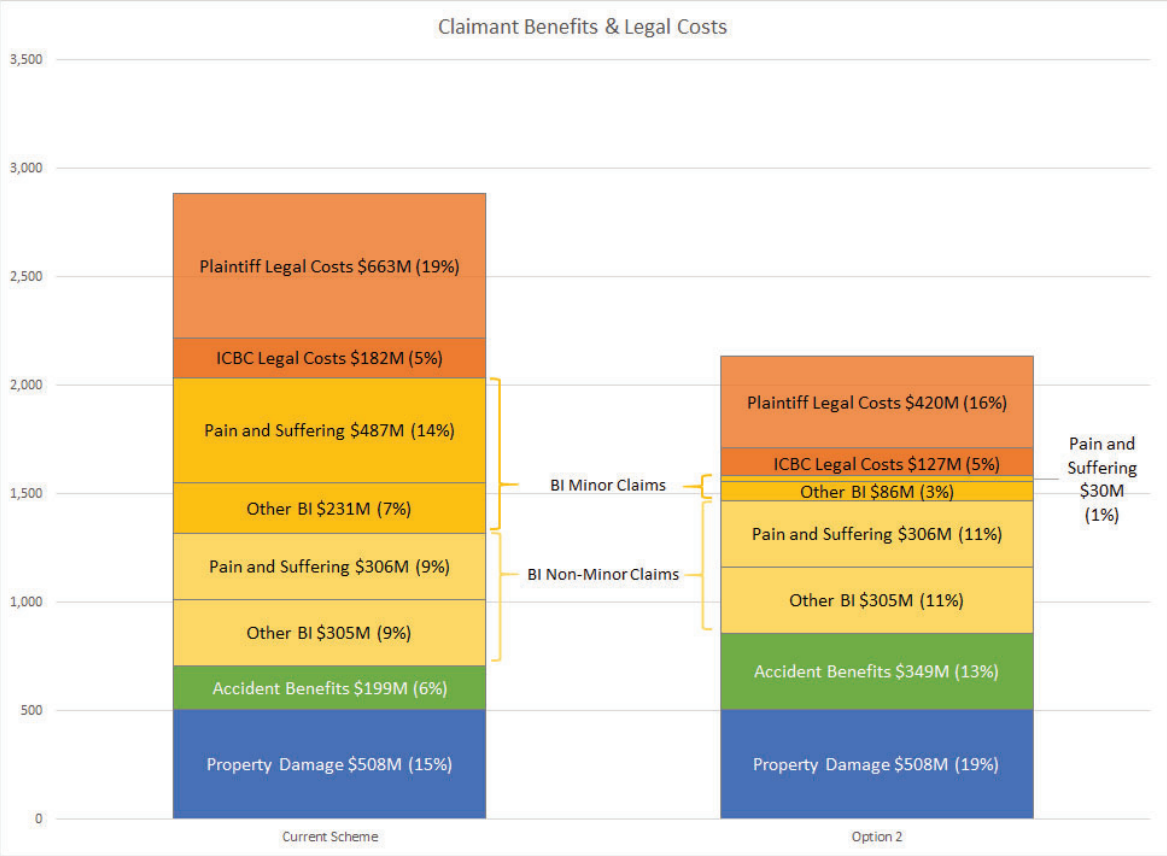
The new ligation and alternate dispute resolution system would require the setting up of a government body independent of ICBC to manage the new system to ensure an appropriate balance in its operation between ICBC and claimants.

Product design elements such as those suggested above are similar to the schemes in place in a number of Australian states including Queensland and New South Wales. These elements were introduced to these schemes in order to curb rising claim costs stemming from similar cost drivers as seen in BC today, by speeding up settlement of claims and reducing the number of disputes.

Introducing these product changes would further improve the balance of the system as the total cost of minor injury litigation claims would decrease and all injured claimants would have access to more appropriate accident benefits. Changes like this could achieve estimated savings of roughly $840 million, of a large enough magnitude to close the Basic rate gap and improve cost control to the point that rate increases could be limited to inflation for five years. As noted earlier in this section these product changes are illustrative, and other alternatives are available to achieve the cost savings targeted.

Key cost outcomes compared to the current state are shown in the chart below.

Chart 35: Breakdown of claim costs and expenses compared to current state (policy year 2016)



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The above chart sets out the cost for policy year 2016 under the current product design and under the proposed product changes:

- The cost of litigated minor injury claims would reduce from $718m (or 21% of total claims costs) to $116m (4%), with the biggest reduction arising from the reduction in pain and suffering awards;
- A reduction in legal costs from $845m (or 24% of total claims costs) to $547m (or 21% of total claims costs);
- An increase in the cost of accident benefits from $199m (or 6% of total claims costs) to $349m (or 13% of total claims costs);
- No change in the cost of non-minor injury claims; and
- There may be a small reduction in ICBC claims handling costs, which are not included in the above reduction.

This design is expected to meet the review objectives of solving for the Basic rate gap and trend gap and keeping future premium increases in line with the rate of inflation (for five years).

8.2.7 Objective 3: Freeze Basic premiums (for five years)

In order to be able to freeze Basic auto insurance rates for say five years, significant claim cost reductions and controls would need to be implemented. Implementing such changes would also start to shift the focus of the insurance system to a more care-focused model as opposed to primarily cash-focused. To achieve this objective, a combination of measures would likely be required, such as:

1) Introduce a cap in the range of $4,000 to $6,000 on pain and suffering for minor injury claims (annually indexed to inflation). A lower cap on pain and suffering for minor injuries would bring greater cost control to the system and make freezing rates more achievable. As under Objectives 1 and 2, the cap would only apply for claimants with minor injuries — serious or catastrophically injured claimants would not be affected.

2) Increase accident benefits by 300%. With the additional savings from the lower cap on pain and suffering for minor injuries, accident benefits could be increased four-fold. These enhancements would mean the weekly wage benefit limit could increase from $300 to $1,200 per week, and the current limit on medical payments of $150,000 could increase to $600,000 (all benefits annually indexed by inflation). ICBC remains being the second payer for loss of wages.

3) Introduce additional rules and regulations for the litigated claim process and introduce an independent dispute resolution system as in Objective 2. A combination of measures discussed in Objective 2 could be introduced to achieve the goals of faster resolution of minor injury claims, with lower associated costs and a fairer balance between parties involved.

4) Make medical and rehabilitation costs payable only as accident benefits, no longer available as a single lump-sum benefit. These accident benefits could be available on a "reasonable and necessary" basis for the lifetime of the person injured in a car crash.

The goal of insurance is to restore premium payers to their pre-accident condition. Insurance is not designed to allow the insured to profit from loss as this would be unsustainable and unaffordable. Shifting the focus from cash settlements to claimants' treatment and care is an effective way to ensure they are returned to their pre-accident condition as best as possible and in a more cost-effective manner. By restricting medical and rehabilitation costs to be payable only as accident benefits and on a "reasonable and necessary" basis, claimants' treatment could be better managed by medical experts rather than legal experts.

The provision of medical and rehabilitation as a stream of lifetime benefits on an as-needed basis is incorporated in the benefit structure of schemes in Manitoba and Saskatchewan, as well as in New Zealand, Victoria (Australia) and New South Wales (Australia) following its recent reforms in 2017. Protocols for effective medical and rehabilitation of claimants would need to be implemented to ensure they receive the proper treatment for their injuries up until they have recovered. Setting maximum fee schedules for care providers would also be important to achieve the desired cost control of such changes. It is also important to the integrity of a more care based model that a simplified dispute resolution mechanism be established to resolve questions over accident benefit entitlement, ideally with access to advocates for those claimants that feel they are being treated unfairly.

With the changes described above, the focus of the system begins to shift to claimant care rather than purely cash settlement. Minor injury costs would be further controlled, and all injured claimants would have access to the significantly enhanced accident benefits. Estimated savings of roughly $875 million could be realized, enough to close the Basic rate gap and improve cost control allowing Basic rates to be frozen for five years. As noted earlier in this section, these product changes are illustrative and other alternatives are available to achieve the cost savings targeted.

Key cost outcomes compared to the current state are shown in the chart below.

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Chart 36: Breakdown of claim costs and expenses compared to current state (policy year 2016)

The above chart sets out the cost for policy year 2016 under the current product design and under the proposed product changes:

- The cost of litigated minor injury claims would reduce from $718m (or 21% of total claims costs) to $48m (1%), with the biggest reduction arising from the reduction in pain and suffering awards;
- A reduction in legal costs from $845m (or 24% of total claims costs) to $507m (or 19% of total claims costs);
- An increase in the cost of accident benefits of $199m (or 6% of total claims costs) to $449m (or 17% of total claims costs);
- No change in the cost of non-minor injury claims; and
- There may also be a small reduction in ICBC claims handling costs, which are not included in the above reduction.

This objective could achieve the review objectives of closing the Basic rate gap and trend gap. Furthermore, it could potentially freeze premiums for the short-term future, improving the affordability of auto insurance premiums for all British Columbians. This could be achieved by moving some benefit types to a care-based rather than cash-based delivery method.

8.2.8 Objective 4: Reduce Basic premiums

Numerous and substantial changes to the current system are required to achieve either Objective 1, 2 and/or 3 above. This suggests the current system is not working as intended — BC drivers are having to pay significant and increasing auto insurance premiums to fund a system that is returning less than 60% of premiums to the premium payers as claimant benefits. In order to achieve the goal of being able to reduce Basic premiums, one possible option is to fundamentally change the design of the product from its current expensive and adversarial nature to a treatment-focused comprehensive care model.

This would involve the following changes:

1) Significantly enrich accident benefits;
2) No lump sum payments for pain and suffering; and
3) Right to sue only available in instances of driving related criminal offences and certain Motor Vehicle Act violations (e.g. excessive speeding, impaired driving, and for prohibited use of an electronic device).

Rather than receiving limited first-party benefits and having to sue an at-fault third party for damages, richer accident benefits would be available to both at-fault and not-at-fault parties as necessary to return them to their pre-accident condition as best as possible. Being able to avoid the claim litigation process to access these benefits would allow claimants to be treated sooner, allowing care to be as effective as possible. In cases where the at-fault driver is criminally negligent (e.g., drunk driving), the right to sue for damages above the accident benefit limits may be available. Limits would be applied to the maximum medical and rehabilitation fees and possibly a maximum loss of wages, and all these would be annually indexed by inflation.

The level of the accident benefits would be at similar levels to other Canadian provinces such as Saskatchewan and Manitoba, whose insurance systems are similarly designed and have stable claim costs and lower average premiums than BC. ICBC would be the primary payer for loss of wages, unlike in the current scheme and the product design under Objectives 1 to 3.

Premiums would be set based on the experience of the at-fault driver, which is the basis of the current method for determining premiums. High-risk drivers under this model would be charged a higher premium relative to lower risk drivers. A high-risk driver is one that causes more accidents than a lower-risk driver. Therefore there would be no change to the current financial incentive to avoid causing car crashes.

These fundamental changes would achieve a significant improvement in scheme efficiency, with the portion of premium returned to claimants as benefits surpassing 74%, as compared to 58% in the current system. With a greater focus on care as opposed to cash settlements, the high costs of the litigation process are mostly removed from the system and redistributed to claimants as benefits.

Without the uncertainties of the litigation process, claim costs could be better estimated and controlled, allowing premiums to be reduced below today's level.

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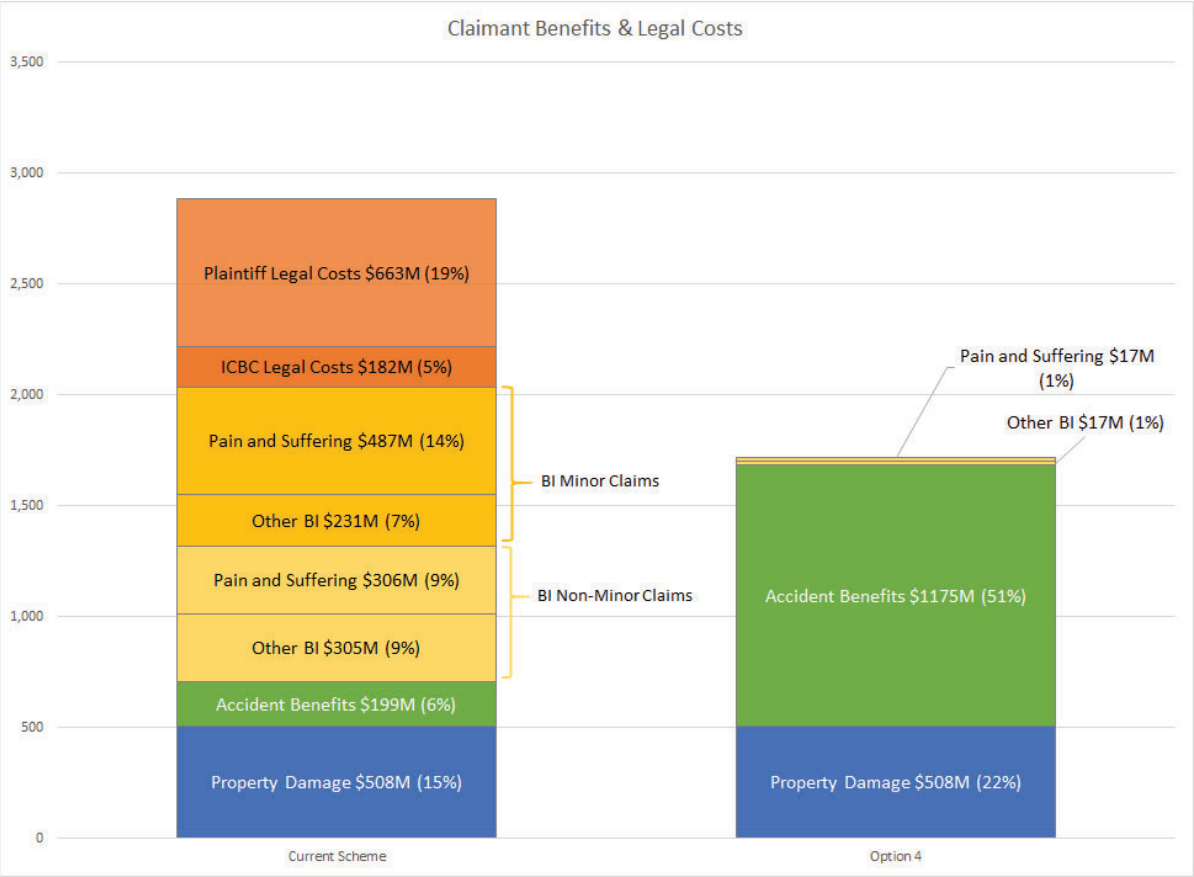
Such a fundamental change to the system would require significant investment as systems and protocols would need to be overhauled. Dispute resolution processes would also need to be implemented to manage disputes between claimants, medical providers, ICBC, etc.

Estimated savings under this objective could be approximately $1.4 billion by 2019. Similar scheme designs achieve stable costs and highly affordable premiums in Manitoba and Saskatchewan in Canada, and in New Zealand – all are publically managed auto insurance schemes. As noted earlier in this section, these product changes are illustrative and other alternatives are available to achieve the cost savings targeted.

Chart 37: Breakdown of claim costs and expenses compared to current state (policy year 2016)



The above chart sets out the cost for policy year 2016 under the current product design and under the proposed product changes:

- Legal costs would reduce to almost $0 while pain and suffering awards would reduce from $790m to $17m;
- Accident benefits would increase from $199m to $1,175m; and

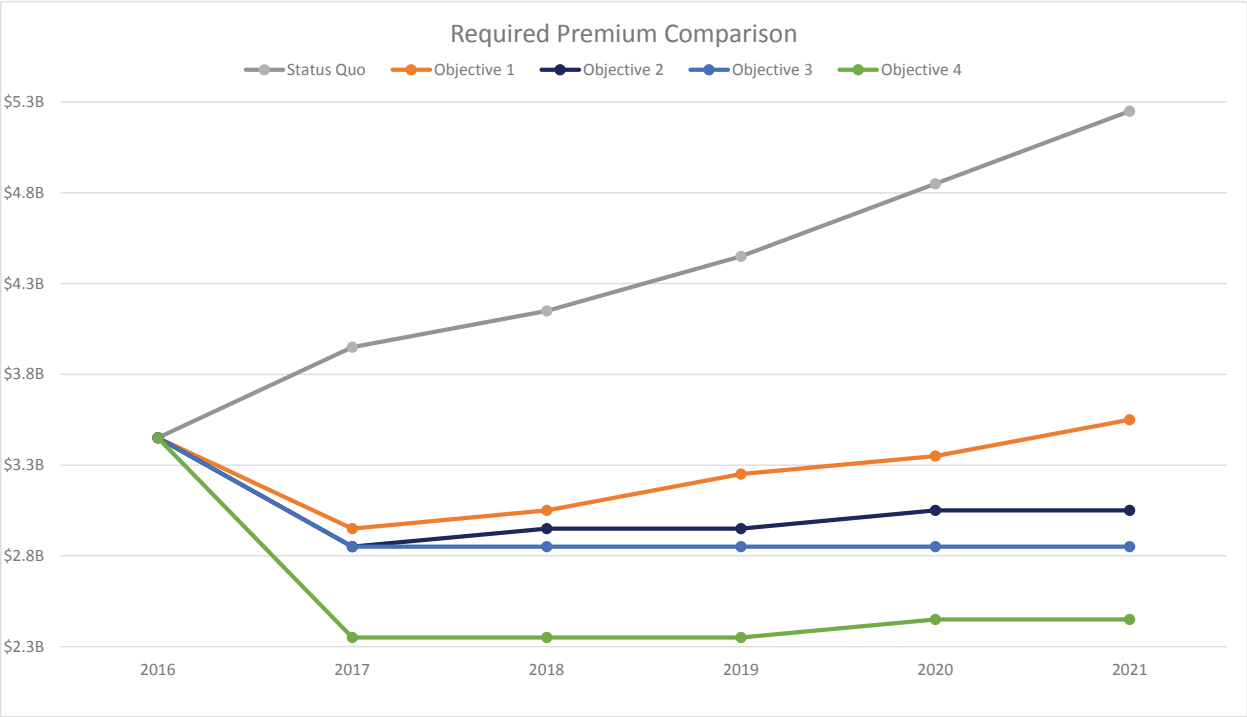
- There may also be a small reduction in ICBC claims handling costs, which are not included in the above reduction.

This objective would represent a fundamental structural change to the entire auto insurance system in BC, which if successfully implemented could bring about substantial reductions in premiums and a more efficient and care-based scheme for all policyholders.

8.2.9 Summary of objectives

The projected premium impact for the Basic product for each objective compared to the current state is illustrated below.

Chart 38: Comparison of projected costs under the current state and each objective



The outlook for premiums under each objective is significantly improved compared to the current system, which, remaining unchecked, would require premium increases of almost 30% by 2019 and over 40% by 2021.

One flow on impact for each product design option above will be to reduce the cost of optional bodily injury coverage as the cost of claims under the Optional coverage that exceed the $200,000 policy maximum for the Basic product for litigated claims would reduce. For example, the cost of the Optional product will reduce for the bodily injury component. We have not estimated the premium reduction for

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the Optional product for this cost impact in any of the product options in the four cost-saving objectives.

8.2.10 Product choice

With the product changes discussed above, an option that should be considered is to allow policyholders to purchase optional "top-up" coverage which if purchased, would avoid any reduction in litigated claim benefits under all options. Similar provisions exist in other schemes in Canada (Saskatchewan) and in the US (Pennsylvania). The details of the design would need to be considered and various optional features explored.

The "top-up" coverage would be offered as part of the ICBC's Optional product and would be open to competition. The cost of the "top-up" coverage will depend on the product design.

8.2.11 Supplementary Product Modifications

ICBC is a provincial crown corporation that provides universal public auto insurance to drivers in BC. As owner of a monopoly insurer of the Basic product the province can make policy decisions as to how ICBC prices individual risks. As an example, ICBC can choose to offer lower rates to young drivers than may be actuarially indicated since they will insure these drivers across their driving lives and hence a deliberate choice has been made to smooth rates across age. Similar decisions can be made based on gender, location etc. Opportunities for rating reform should be viewed through this lens to ensure they meet policy objectives.

During the course of our engagement we were provided detailed information regarding the current product structure and rating model. Based on our review of this information against other models in other jurisdictions we believe there are opportunities for other reforms which will improve the fairness of the current product and that should be considered as part of a broader product reform.

Direct Compensation Property Damage (DCPD)
The Third Party liability coverage included in ICBC's Basic product includes coverage for Bodily Injury liability and Property Damage liability. The Property Damage liability coverage provides protection to motorists for damage they cause to property of others in the event of an accident. This includes damage to another motorist's vehicle or in rare cases damage to other property such as a person's fence if you drive off of the road onto someone's property. Since this is a "Third Party" coverage the injured party must make a claim against the liable party to be compensated for damage to their property.

In a number of Canadian jurisdictions the Property Damage liability coverage has been modified to be a Direct Compensation Property Damage[32] coverage.

Direct compensation means that the injured party does not have to sue to be compensated for damage to their property, but instead are compensated directly by their own insurer. This approach has a number of advantages:

- Administrative costs of settling claims for property damage would be reduced;
- It allows for more equitable rating of vehicles based on their claims costs, such as that used by ICBC in the optional collision coverage;
- Fault determination for purposes of rating is not affected by this change;
- As in the optional collision coverage, it allows for the introduction of deductibles which allows consumers to reduce premium levels should they choose.

We recommend ICBC consider replacing the Property Damage liability coverage with DCPD, however we recommend that this coverage remain part of the Basic product. Should this be an optional coverage, consumers who choose not to purchase this product may unwittingly find themselves without coverage for unusual or unanticipated situations such as damage to non-vehicle property, out-of-province exposure etc. We note that the other Canadian provinces that have introduced the DCPD coverage have kept this coverage as part of the mandatory product.

Usage Based Insurance (UBI)

A number of insurers in Canada and other jurisdictions offer consumers the option of participating in a UBI program that is intended to match insurance rates with distance travelled and other driving behaviour such as fast acceleration, hard braking, hard cornering, speed and time of day travelled. This behaviour is monitored electronically and converted into a score which adjusts premiums on renewal. UBI technology allows drivers to monitor their driving behaviour through reports and drivers can modify their behaviour to achieve lower scores and lower premiums. This technology, therefore has the potential to improve driver behaviour, make roads safer and reward good drivers.

Claim Rated Scale (CRS)

ICBC has in place a CRS system which provides customers with either a surcharge or a discount depending on their driving history and previous claims experience. There are 20 levels of discount ranging from 5% to 43% off of the base rate and 10 levels of surcharge ranging from 10% to 205%. Movement on the scale is based on whether or not there was a chargeable claim in the past year and the extent of movement on the scale depends on your current discount/surcharge level at the time of the claim.

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[32] In these jurisdictions DCPD only covers damage to the automobile. Damage to other property is covered by PD liability. It may not be necessary for ICBC to separate out property damage liability to vehicles from other property since they are a monopoly insurer, however this should be explored in greater detail

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Engaging in what are known to be high risk driving behaviours leading to convictions for speeding above posted limits, driving while impaired or distracted driving, currently have no impact to a drivers level of discount in the CRS system.

Clearly, the goal of rewarding good drivers and penalizing poor drivers is not being met by the CRS system. ICBC has recently announced changes that will result in quicker recognition of multiple claims in the CRS system, however we do not believe this will provide sufficient differentiation between those with poor driving experience from those with good driving experience and recommend that alternative models be explored to improve this mechanism.

8.3 Interim measures

Over the years and with particular focus since 2012, ICBC has either completed, or is in the process of delivering against, a number of initiatives to reduce costs borne by the Basic insurance scheme. Costs have been reduced from a wide range of operational, staffing and technology initiatives across the organization and its partners. Such initiatives include reductions in management costs and operating budgets, significant productivity gains in claims management and handling initiatives, quality assurance and fraud mitigation programs, and strategic sourcing.

8.3.1 ICBC's progress against prior recommendations

EY conducted a high-level review of ICBC's current state claim operation and evaluated progress against recommendations from previous reviews undertaken by the corporation over the past few years. ICBC has made significant progress and has implemented numerous initiatives aimed at reducing costs associated with claims handling, while also focusing on increased customer satisfaction. Included in these initiatives is ICBC's Operational Excellence program, which integrates Lean methodologies into the claims operation to drive continuous improvement and process efficiency. The following table describes the progress against the review recommendations that ICBC has achieved (resulting in over $100 million in savings) over the past few years, through a dedicated focus on operational, staffing and technology initiatives.

Table 27: ICBC progress against review recommendations

Prior recommendation	Status
ICBC should develop a retrospective claim Quality Assurance (QA) Program that focuses on both timely completion of key claim activities along with a rigorous qualitative analysis of claim subprocesses.	Currently in progress. QA program is in the process of being formally defined and implemented.
Contract with third-party resource or create in-house specialized medical unit within the claims operation to assist in reviewing and analyzing medical exposures.	Currently in progress as suppliers have been identified though an RFPQ process. Targeted implementation of summer 2017.
Increase training on common medical aspects that lead to high exposure claims such as soft-tissue injuries, impact of comorbid conditions, subjective diagnosis and evidence-based medicine.	ICBC developed additional training courses focused on the medical aspects that can lead to high exposure claims.

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Prior recommendation	Status
Increase training on settlement planning and negotiation.	ICBC is currently evaluating solution options, including input from plaintiff counsel. In 2014, ICBC developed four instructor-led negotiation courses, which have been continuously updated and modified.
Continued planned claim analytics initiatives specifically around severity predictive modeling and fraud identification leveraging ClaimCenter capabilities.	Currently in progress as a fraud analytics vendor was identified and a proof of concept was completed. The analytics engine is currently being used, and full implementation of the fraud analytics initiative is slated to be complete by November 2017.
Broaden competitive procurement activities.	In progress. Some strategic sourcing initiatives still waiting approval or paused by government for further review.
In order to better understand the impact on claimants and overall costs, ICBC should track the original offer vs. the ultimate payout. It would also be very helpful to better understand what percentage of payout, on average goes to the claimant vs. the lawyers.	As part of the ClaimCenter implementation, individual offers can now be tracked and reported on.
Take a stronger stance on borderline and suspicious claims via targeted litigation, as needed. Consider enhanced litigation strategy protocols on claims with minor vehicular damage.	ICBC's Special Investigation Unit has been increased and a greater focus has been placed on suspicious claims as part of ICBC's ongoing Counter Fraud Strategy.

In any other operating environment, the savings achieved to date would have been considered a significant management success. However, the growing premium rate gap caused by the recent increases in accident and claims trends in BC has readily consumed those savings, and at the same time highlighted a much bigger series of cost pressures that internal productivity and efficiency gains cannot and will not address.

8.3.2 Observations on the current state operating model

The current claims operations strategy is heavily tailored to the unique challenges ICBC faces operating a public auto insurance model in the province of BC. Given the current litigation-based model, ICBC's claims operation is focused primarily on productivity and resolving claims as quickly as possible, with a goal of resolving claims prior to legal representation and limiting the costs and disbursements owed at the time of settlement.

- **Segmentation and workflow** – The claim workflow is largely dictated by whether or not a claimant has retained counsel and then secondarily segmented by severity of injury and by which firm has been retained. Rather than triaging and assigning claims based on the injury severity, the primary segmentation is based on legal representation.

- **Productivity goals** – Adjusters largely are focused on reaching productivity and closure goals that are centred around claim cycle time and early resolution of claims.

This production-based operating strategy is not common among injury claim operations in the industry. While this strategy is appropriate based on the challenges posed by the current BC system, in the event of product reform, significant changes to the operating model will be required. ICBC will need to shift from a production-focused environment to a more standard claim operating model that is focused on case management of treatment, thorough claim investigations, evaluations, and efficient and fair resolution for all parties.

8.4 Incremental impact to the future performance of insurance

While the major reform efforts are being planned and executed, there are a number of initiatives that ICBC can and should take in the areas of operational improvements to minimize financial losses in the interim. Previous reviews as well as ICBC management have identified a large number of cost savings initiatives, some of which were completed, others that are in progress (e.g., QA and fraud programs), and a number of which have not yet received final approval for implementation (e.g., strategic sourcing for auto repair and treatment costs). There are also cost savings in ICBC's financial forecasts associated with some initiatives pending final government approval.

With that said, there remain a number of outstanding initiatives that have been identified by the Board and management that are still to be implemented, and although they cannot solve ICBC's rate and trend gap outlined in this report, they are important and prudent steps to minimize ICBC losses in the short term. Some of these key initiatives are described below.

For simplicity's sake, we would recommend that a rapid refresh/validation is done on the existing cost savings initiatives, and that they are prioritized based on alignment to strategy, cost-saving potential and ease of implementation. Recognizing that the main reform activities around road safety and product reform are going to drive the bulk of the savings and have the only material impact on rates, and that the organization has a limited amount of capacity, the highest priority initiatives should be

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undertaken at a pace that doesn't distract the organization from its more significant change agenda. In addition, ongoing innovation and performance improvement processes should be continued, to find additional incremental improvements in future years.

8.4.1 Claims cost-saving recommendations

Absent any product reform, two in-flight claim initiatives (once fully implemented) have the potential to drive additional claim cost savings:

- ICBC is in the midst of developing and implementing a formal retrospective claim Quality Assurance Program that focuses on both timely completion of key claim activities along with a rigorous qualitative analysis of claim processes.
- At the forefront of ICBC's counter fraud strategy is the utilization of an algorithmic, data-driven fraud detection tool that can be used to identify claims that have a higher potential for fraud. Since 2016, ICBC has been working with its analytics vendor on developing a detection tool and has already completed a proof of concept. Based on the proof of concept, ICBC estimates approximately 10,000 special investigation unit (SIU) referrals will be generated on an annual basis across both bodily injury and material damage. It is anticipated that the tool will be in full production by November of 2017.

Organizations that successfully implement leading practice Quality Assurance and Fraud Mitigation programs have experienced savings between 2% and 3.5% of overall claim severity. Given the unique nature of the BC system, EY estimates potential savings on the lower end, between 1% and 2% of annual claim costs (approximately $30—$60 million in annual savings). ICBC could expect to begin to experience savings approximately one year post full implementation of these two programs.

In addition, there are a number of previously identified strategic sourcing initiatives, including the tiering of auto insurance suppliers to drive better customer service and cost savings, an update of glass moulding policy, standardized costing for medical assessments and reports, which should be revisited based on the significant savings that could be made.

8.4.2 Driver risk premiums: higher-risk drivers should pay for their choices and behaviours

ICBC's current insurance model does not adequately price driver behaviour and choices, having not incorporated any significant rate design changes since 2007. As a result, a driver's individual Basic premium no longer reflects the risk and cost that they impose on the Basic insurance system. Fundamental changes to ICBC's rating scheme — targeted at increasing fairness in Basic rates, while also mitigating Basic cost pressures — will help reduce pressure on Basic insurance by promoting a cultural shift toward safer driving, increasing revenues from high-risk drivers (including appropriately pricing premiums for those that choose to drive high-value luxury vehicles) and reducing claims costs.

High-Value vehicle Surcharge

Recognizing the rapidly increasing costs to repair high-value vehicles, government recently approved a high-value vehicle (HVV) Basic surcharge of 100% on vehicles over $150,000. We believe this was a positive step but would recommend going further to achieve greater fairness in rates recognizing the extra costs being borne on the insurance system and all policy holders by expensive luxury vehicles. EY recommends the introduction of a sliding scale pricing model which would apply to the same group of vehicles based on the vehicles value over the threshold. For example, applying a $1,000 surcharge to vehicles above the $150,000 threshold plus an additional $7 premium for every $1000 between the threshhold amount and the MSRP

Example:
For a $180,000 vehicle the HVV premium is $1000 + $210 = $1210
For a $575,000 vehicle the HVV premium is $1000 + $2975 = $3975

A sliding scale approach would offer a fairer distribution of premium costs amongst high-value vehicle owners and would increase annual revenue from this initiative. The sliding scale surcharge option is expected to generate an estimated $2.5 - $3m in annual premium.

Public consultation in 2012 (Basic Vehicle Insurance Rating System Consultation and Engagement) has informed a number of preferred strategies to better set premiums for Basic vehicle insurance coverage. Customers have told ICBC they think the system would be fairer if lower-risk drivers paid less for their vehicle insurance, and higher-risk drivers paid more. Regardless of the current or future choice of product structure, ICBC needs to change its pricing and risk model to be able to clearly identify and penalize higher-risk drivers, and conversely improve the reward system for those who drive safely. ICBC has committed to its regulator, BC Utilities Commission, to move to a system that better recognizes driving records. It is estimated that a modernized pricing and risk model could generate up to $80m in claim savings per year. We recommend that detailed design on fair pricing and a modernized risk model commence immediately.

8.4.3 Regulatory oversight

ICBC is currently regulated by the BC Utilities Commission. The current system is based on a utility model and was not built for purpose – the annual rate filing and intervenor process is time consuming, expensive and inefficient. The future requirements of the organization will require a nimbler approach to competitive pricing and the ability to respond to customer requirements and to evolve the system in an intelligent, responsive manner. There may be other models that would achieve these goals more efficiently, and we encourage a review of the governance and regulatory framework.

8.4.4 Non-insurance revenue opportunities

There may be further opportunities to reduce costs or free up revenue though further examination of non-insurance services. For example, we would encourage the progression of analysis related to the viability and fit of services such as salvage operations. ICBC has significant real estate holdings, which may also represent potential unrealized value. Other jurisdictions have moved more assertively into

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the auction and sale of specialized license plates (vanity plates). Again, while these will not solve the fundamental financial issues, they may represent financial opportunities for the corporation.

9. Summary and implementation plan

The reform of BC's auto insurance system is not going to happen overnight, and a thoughtful and measured approach is required. We recommend structuring the reform efforts in several parallel streams: those that require stakeholder consultation and the development of new policy and legislation (including road safety and product reform) and those interim measures that can and should be undertaken immediately to minimize ongoing losses and to set the foundation for successful reform.

Experience would show that there are a number of critical success factors that should underpin the implementation approach:

- Robust and inclusive public and stakeholder consultation results in better policy development and ultimately a stronger legislative framework. It is also critical for gaining support for the case for change. Key stakeholders include various levels of government, the public, medical professions, regulators, the legal community, key suppliers and special interest groups.
- The program must be managed as an integrated portfolio given the many dependencies between the streams.
- Investment in change management is essential — the impact on the system and supporting organizations (ICBC, brokers and other key stakeholders), employees, and the nature of work they undertake cannot be underestimated.
- Progress and outcomes must be carefully monitored and value should be delivered throughout the implementation time frame.
- Dedicated leadership and bringing the right talent to the table is critical.
- Momentum is important — it needs to proceed at pace.
- Reform is not a one-time effort — the overall system will require ongoing maintenance and must be designed to evolve over time.

Chart 11 (Section 2.4) outlines an illustrative and high-level implementation approach, designed to deliver the reform outcomes within two years through a series of immediate initiatives and those that require ongoing and longer-term consultation and development. There would also be ongoing efforts of refinement and incremental improvement activities, which would continue into the future. The key streams of activities are described in greater detail below:

1. **Policy and Legislative Framework Development:**
    a. The development of strong public policy informed through comprehensive consultations is an important first step and will support both the Road Safety and Product Reform streams of work. Good public policy stands the test of time and will feed directly into the development of smart and practical legislation as well as supporting regulations. This process is somewhat iterative and is expected to last approximately a year.

2. **Road Safety:**
    a. Road Safety Vision and Governance – Road safety involves a number of different authorities including the Ministry of Transportation, Solicitor General, police.

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RoadSafetyBC and municipalities. A provincial vision needs to be agreed to, and then the proper leadership structure and accountabilities must be clarified as there is a lack of clarity within the system today. There is important work to do in terms of defining allocation of resources and funding mechanisms as well as tracking performance against targets and outcomes.

b. Road Safety Delivery and Culture – Detailed design of an integrated approach to address the key causes of crashes: distracted driving, speed and impairment. Initiatives include expanding and optimizing intersection and speed cameras, deployment of more road safety unit officers, solutions to address distracted driving, improved road infrastructure and design of convictions and penalties to impact driving records and premiums. This suite of initiatives is aimed to change driving culture and behaviour and will be reinforced through driver education, enforcement and increased awareness.

3. Product Reform:

a. Product Design – Detailed product design will need to be undertaken to refine the key elements of the product portfolio, including establishing what specifically will be included in the Basic product and what elements of choice will be offered within the Optional offerings. This will feed into the legislative process. Specific claimant benefits will also need to be defined, and the whole portfolio will be supported by detailed pricing and risk models.

b. Operating Model and Implementation – Once the detailed product design has been completed this stream of activity is focused on understanding the impact on people, processes and technology and then designing and executing on the implementation. A shift from a litigation-based to care-focused model will have a significant impact on the organizational construct, business processes and skills required to support this model. Staff will need to move towards essentially a treatment case management function and away from legal process management, which will necessitate the definition of a new business service model, target operating model, roles and skills definitions. Data requirements will need to be defined, and changes to the risk rating engine and PolicyCenter and ClaimCenter applications, amongst others, will need to be delivered.

4. Interim Measures:

a. Finally, there are a bundle of activities that should begin now in order to drive incremental savings as well as establish a strong foundation for successful reform. These include:

   i. Implement some specific claims efficiency and cost savings initiatives such as completion of the QA and fraud programs and the strategic sourcing portfolio;

   ii. Validate and refine the auto insurance governance and regulatory model for greater efficiency and effectiveness;

   iii. Modernize the risk rating and pricing model to provide greater fairness and better reflect the risks related to driver behaviour and choices (e.g.,

implementation of sliding scale pricing for luxury vehicles, including convictions and penalties within pricing design);

iv. Analyze non-insurance revenue and funding sources to ensure better alignment and allocation; and

v. Continue to innovate and bring forward other cost savings initiatives such as rationalization of the real estate portfolio, potential sale of non-core assets, and additional revenue sources such as vanity plates, etc.

The entire implementation program would be supported by a strong governance model, program and risk management, and strategic stakeholder consultations.

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Appendix 1: Jurisdictional comparison: performance, product and policy

This appendix contains a summary of the information gathered in an international jurisdiction scan in respect of auto insurance product and covers:

- **General information** including population, auto numbers insured, type of insurance model (public or privately underwritten), coverage provided, key legislation, interaction with health system, regulatory model and other relevant information
- **Benefits and compensation available** including a summary of key benefits available by type (e.g. loss of wages, medical) and the form of delivery (e.g. litigation, accident benefits)
- **History of reform** including an overview of recent reforms (if any), drivers and objectives of reform, summary of main changes and impacts
- **Premium system** provides a short summary of rating variables and limitations imposed
- **Key metrics** provides a summary of the measures used in this report (such as affordability and efficiency) plus base information used in those metrics (e.g. number of claims, number of accidents/casualties, average weekly wage, etc.)

The information gathered through the jurisdictional scan on road safety is contained in the body of the report.

The information provided in this appendix is based on publicly available data and information. Consequently:

- The results should only be used as a general guide to the differences between the performance of each jurisdiction due to the limitations noted below
- There are gaps in the public information available which vary from jurisdiction to jurisdiction
- Definitions of metrics can vary between jurisdictions and as we do not have access to the underlying data we are relying on the publicly available results are on a consistent basis between jurisdictions. Even the definition of the underlying data may vary by jurisdiction

The approach we took in identifying the relevant jurisdictions was:

- As noted above we focused on auto schemes where there was sufficient public information available to provide a sensible comparison to BC
- Focused on a sample of jurisdictions most relevant to the scope of work including examples where the scheme had similar experience to BC and how they dealt with the issues. The intention was to provide a reasonable spectrum of examples
- We focused on developed countries as they are the most relevant having well developed social and economic infrastructures and auto schemes to compare against BC.
- The following countries were deemed to be of most relevance for a comparison against BC due to their social and economic infrastructures, legal frameworks, product design and available information:
    - Other Canadian provinces
    - USA (selected states)
    - UK
    - Australia (selected states)
    - New Zealand

Australia overview

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
Model for mandatory product	Privately underwritten	Publically underwritten	Privately underwritten	Publically underwritten
Scheme coverage	The CTP scheme covers not-at-fault claimants with some at-fault coverage. Not at fault injured person can include: - the driver - passengers - someone else driving your vehicle - driver and passengers in another vehicle - motorbike riders and pillion passengers - cyclists, pedestrians and other road users If at fault, cover for the first $5000 of treatment costs and lost income incurred in the first six months after an accident. Contributory negligence results in reduced benefits for partly at fault: - driving at an unsafe speed - travelling in a vehicle when you knew the driver was affected by alcohol or drugs - not wearing a seatbelt - not wearing a helmet on a motorcycle or bicycle - under the influence of alcohol or drugs Special protections: - Children (All children under 16 who are residents of NSW and injured in motor accident in NSW are covered by a Green Slip, regardless of who is at fault - Close relative dies (if a close relative dies in an accident caused partly or completely by another driver) - Blameless accident e.g. vehicle has an unexplained failure or a	The TAC covers transport accidents directly caused by the driving of a car, motorcycle, bus, train or tram. The TAC can provide support services for people injured in a transport accident as a driver, passenger, pedestrian, motorcyclist, or in some cases, a cyclist. Interstate accidents covered if involving a Victorian registered vehicle. The TAC can pay benefits to an eligible client injured in a transport accident involving a registered and/or an insured motor vehicle on private land. However, the TAC is unable to pay benefits to any person injured as a result of a transport accident involving an unregistered/uninsured motor vehicle on private land and where no transport accident charge has been paid (Transport Accident Act 1986 reference: s.41A and s.41B).	A CTP claim can be made if injured in a motor vehicle crash in Queensland due to fault of the driver, owner or another person insured under a CTP insurance policy. A claim can be made if partially at fault, but compensation may reduce. The Nominal Defendant is established under the MAI Act to provide access to compensation for injured persons where the at-fault vehicle is uninsured or cannot be identified. The Nominal Defendant is also required to meet the cost of claims in the event a CTP insurer becomes insolvent (as was the case with FAI, a licensed CTP insurer and subsidiary of the HIH Insurance Group which collapsed in 2001). Compensation cannot be claimed if the injured person was totally at fault or no-one was at fault. Insurers may offer limited additional benefits for at fault driver cover for serious injuries or death. Since 1 July 2016, an at-fault driver or any other person who sustains catastrophic injuries as a result of a motor vehicle accident, may be eligible to receive lifetime medical, care and support services under the new National Injury Insurance Scheme Queensland (NIISQ).	All New Zealanders and visitors to New Zealand who get injured can apply for help. Catastrophically injured parties are also covered by the ACC. Everyone in New Zealand is eligible for comprehensive injury cover: - no matter what you're doing or where you are when you're injured, e.g. driving, playing sport, at home, at work - no matter how the injury happened, even if you did something yourself to contribute to it - no matter what age you are or whether you're working – you might be retired, a child, on a benefit or studying.

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	driver has a stroke and causes an accident - Those who are catastrophically injured are supported by the Lifetime Care and Support Scheme (icare lifetime care) regardless of fault. In NSW all insurers are required to be part of the Nominal Defendant fund. Where a vehicle is uninsured, or unidentified the injured person can make a claim through the Nominal Defendant, meaning they don't go without adequate treatment or compensation.			
Benefits available	Fault-based (with exceptions) Common law with restrictions At fault claims receive up to $5,000 in benefits	Hybrid No fault Defined benefit Common law restricted to the most seriously injured	Fault-based Common law with restrictions	No fault Defined benefits No access to common law
Regulatory body	State Insurance Regulatory Authority (SIRA) Funded by levy on premiums The Motor Accidents Insurance Regulation (MAIR) branch has assumed the functions of the former Motor Accidents Authority as the regulator of the state's privately underwritten compulsory third party personal injury insurance scheme. It is responsible for monitoring insurer performance, supporting road safety initiatives and promoting optimal recovery for injured people. A Medical Assessment Service (MAS) deals with disputes in relation to medical and care treatment plus assessment of whole person impairment A claims Conciliation and Resolution Service (CARS) is an alternate dispute (i.e. not court based) process for to speed up resolution of claims at a lower cost. Parties can request an	Transport Accident Commission (TAC) does not view itself as regulator - view Treasury as regulator Funded by vehicle registrations The TAC is a Victorian Government-owned organisation whose role is to promote road safety, improve the State's trauma system and support those who have been injured on the roads. Disputes are managed via an internal review within the TAC (no legal representation is required) which is conducted by an area independent of the management of the claims. A high proportion of disputes are resolved at this stage. The second step is an application to the Victorian administrative appeal tribunal which is a multi-purpose tribunal (i.e. not just for auto claims). Very few claims proceed to a court process.	Motor Accident Insurance Commission (MAIC) Funded by levy on premiums MAIC is responsible for: ‣ ensuring people injured in road accidents receive fair compensation ‣ compensating people who are injured as a result of the negligent driving of an unidentified or uninsured motor vehicle through the Nominal Defendant ‣ ensuring Queensland motorists receive affordable premiums ‣ the regulation of insurers' activity and compliance ‣ meeting any claim costs of an insolvent insurer.	Accident Compensation Corporation (ACC) Funded by levies on petrol use and motor vehicle licensing fees As a Crown organisation, their role is set out by the Government. ACC is responsible for: - preventing injury - making sure people can get treatment for injury, if it happens - help people get back to everyday life as soon as possible.

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	exemption from CARS for complex matters and other specified cases (e.g. infant claims).	Limits are imposed for legal fees per dispute which are quite low		
Legislation/ Acts	State Insurance and Care Governance Act 2015 Motor Accidents Compensation Act 1999 Motor Accidents Compensation Regulation 2015 Motor Accidents Compensation (Determination of Loss) Order 2009 Motor Accidents Compensation (Determination of Non-Economic Loss) Order 2009 Motor Accidents Act 1988 Indexation of Damages, Section 79 and 79a - Motor Accidents Act 1988 & Section 125 and 134 - Motor Accidents Compensation Act 1999 Motor Accidents (Lifetime Care and Support) Act 2006 Motor Accidents (Lifetime Care and Support) Regulation 2015	Transport Accident Act 1986 Transport Accident Regulations 2007 Transport Accident (Impairment) Regulations 2010 Transport Accident (Administration of Charges) Regulations 2011	Civil Liability Act 2003 Civil Liability Regulation 2003 Motor Accident Insurance Act 1994 Motor Accident Insurance Regulation 2004	Accident Compensation Act 2001 Official Information Act 1982 Privacy Act 1993
Interaction with Health System / Social Security System	Compensation received from a CTP claim can affect the amount of social security (Centrelink) income support being received. When a claim reaches judgment or settlement and is for more than $5,000 including all legal costs, repayments need to be made for Medicare benefits, nursing home benefits, residential care or home care subsidies that will be made in the course of the claim.	Same comments as NSW for the interactions with the social security system/health system (Centrelink/Medicare)	Same comments as NSW for the interactions with the social security system/health system (Centrelink/Medicare) If you are unable to claim compensation you will need to rely on sick leave, Centrelink benefits, Medicare and the public health system unless you have other insurance policies such as income protection or private health insurance.	The ACC covers loss of earnings due to accidents. The other systems support New Zealanders for all other reasons. ACC benefits for injuries from accidents may affect the NZ Super allowance.
Fraud - estimated costs	Fraudulent and exaggerated claims cost NSW motorists as much as $400 million per year. This is estimated to add around $75 to the cost of each Green Slip. A CTP Fraud taskforce was established in 2016 and to date has made arrests following	When endeavouring to reduce fraud across the scheme the following enforcement action was taken during 2015/16. There were 21 prosecutions finalised through the Magistrates Court. In sixteen (16) cases, a conviction was recorded and a total of $563,655 in restitution was awarded to the TAC. Nine	It is also worth noting that while the Scheme receives over 6,500 claims each year, less than ten cases a year are referred by CTP insurers to MAIC as being potentially fraudulent. It is in insurers' interests to be vigilant to such activity; hence the low referral numbers could	The ACC estimated up to 11 per cent of its more than $2.5 billion annual spend was being misappropriated by exaggerated injuries and medical providers inventing "phantom" clients. "Total fraud is estimated by ACC to be somewhere between 8-11 per cent of total entitlements

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	investigations into claimants and scheme providers including legal firms and medical services.	(9) matters are currently before the courts at various stages where TAC is alleging fraud against the scheme totalling $253,887. Forty-nine (49) warning letters for breaches of the Act relating to fraud and providing false information to the TAC were sent to clients, Medical and Service Providers incorporating demands for reimbursement of $302,205.	be interpreted as an indicator that fraud is not a significant problem in the Queensland CTP Scheme. (2016 Scheme review discussion paper)	paid," the report said. (Based on a news article on 29 Oct 2014, which states that an unofficial report by the Serious Fraud Office in February 2013)
Population (millions)	7.7	6.0	4.9	4.7
Exposure / Number of registered vehicles (millions)	6.1	4.75	4.9	3.9

Benefits available

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
Overview of benefits	Primarily lump sum Economic loss (lost income and loss of future income) Treatment and care Non-economic loss / General damages (pain and suffering) Death (medical, funeral costs, loss of financial support/earnings/services from the relative who died) Legal fees	Primarily defined benefit with limited access to lump sum (through common law) Economic loss Treatment and care Lump sum impairment benefit Non-economic loss / General damages Death Legal fees	Primarily lump sum Economic loss Treatment and care Non-economic loss / General damages Death Legal fees	Periodic benefits and lump sum Economic loss Treatment and care Non-economic loss / General damages Death
Non economic loss benefits	Only available if Whole Person Impairment (WPI) is greater than or equal to 10%, damages capped at $521,000	Access to common law only available to those injuries defined as serious or a WPI over 30% Only available if assessed at more than $52,770 Capped damages at $528,050	Variable amount based on an assessment of the injury using an Injury Scale Value (ISV) between 0 and 100. Capped damages at $358,000	Level of impairment must be 10% or more and injury after 1 April 2002 to be eligible for a lump sum payment Capped damages at $100,000 and impairment of 80% or more
Economic loss benefits	No fault: Limited benefit under the Accident Notification Form (ANF) for lost earnings made after treatment expenses have been paid Common Law: 100% of past losses and estimated future lifetime losses awarded at common law (capped at $4,777 net per week – as at 1 October 2016, adjusted annually)	No fault: 80% of pre-injury earnings (excl. first 5 days) subject to caps and drop-downs. Overall maximum of $99,200, ceasing at 3 years unless seriously injured (i.e. over 50% Whole Person Impairment (WPI)). A work capacity assessment determines ongoing entitlement to benefits. Common Law: Restricted access to future economic loss at common law - capped at $1.1m. Access to common law is only available to those injuries defined as serious or a WPI over 30%.	No fault: not applicable Common Law: Capped at 3 times average weekly earnings in Queensland (currently $4,380.90 gross based on May 16 Average Weekly Earnings – Ordinary Time (AWOTE) for Queensland)	Up to 80% of pre-incapacity weekly earnings after being off work for a week. Subject to a maximum which is adjusted each year
Medical / Treatment / Care benefits	Past and future costs: negotiated and paid at settlement Gratuitous care: only if assistance is needed for at least 6 hours per week and for at least 6 consecutive months of the year	Past and future costs: available as part of the injury management plan, subject to an excess ($629) Gratuitous care: not recoverable Not available at common law	Past and future costs: negotiated and paid at settlement Gratuitous care: only if assistance is needed for at least 6 hours per week and for at least 6 consecutive months of the year	The Accident Compensation (Liability to Pay or Contribute to Cost of Treatment) Regulations 2003 sets out the types of treatment and amounts that are paid. These regulations are set by government. Gratuitous care: based on an assessment by ACC and can be provided by an ACC contracted agency, non-contracted agency, private caregiver. ACC pays

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
				agencies up to an approved amount. Co-payments may be required when using a non-contracted agency charging a higher rate.
Death / Funeral benefits	You can claim for: medical expenses funeral costs loss of financial support from the relative who died loss of services, such as the care of a parent for a child loss of earnings from your relative from their injury until their death You may be able to claim even if the relative who died was partly at fault in the accident.	Support with funeral/burial and cremation expenses (maximum amount of $15,010) Travel and accommodation expenses to attend a funeral, burial or cremation (up to $5,000 per family) Support with family counselling (maximum of $15,920 per family) Support for a dependent spouse or partner (lump sum up to $178,540, weekly payment and/or support at home) TAC support for dependent children (lump sum of up to $178,540, legal guardian $175 each week for each dependent child, education allowance of $2,850 per year)	Examples of loss that may be claimed by a relative or dependant of the person who sustained a fatal injury are: - reasonable funeral costs - financial loss arising from the death of an income provider (this could be claims from the surviving spouse, including de facto partner, dependent children and other dependent persons).	Lesser of the actual costs of the funeral; or $4,500. Pay a survivor's grant for a deceased claimant as follows: (a) to a surviving spouse or partner of the claimant, $4,702.79 but, if there is more than 1 surviving spouse or partner, the Corporation must divide that amount equally between them: (b) to each child of the claimant who has not yet turned 18 years, $2,351.40: (c) to any other dependant of the claimant, $2,351.40. The amount of any weekly entitlement to payment for child care per child is as follows: (a) if the number of children of a deceased claimant entitled to payment for child care is 1, $100; and (b) if the number of children of a deceased claimant entitled to payment for child care is 2, $60; and (c) if the number of children of a deceased claimant entitled to payment for child care is 3 or more, $140 divided by the number of children of the claimant for whom payment is being made.
Other benefits	Legal fees are regulated, with contracting out available as agreed between lawyers and claimants	Lump sum impairment benefit paid if WPI exceeds 10% according to a scale based on WPI assessment Legal fees payable subject to court scale	Legal fees by conference, as agreed between parties. For court settlement, varies by accident period and settlement amount relative to earlier negotiation amounts; for the most recent period, fees are subject to a lower settlement threshold of $43,020, with the fees limited to $3,600 if benefit is less than $71,730	Treatment and rehabilitation costs for vistors who are injured in an accident that occurred whilst in New Zealand. Covers accidents that occurred overseas but only for the costs incurred after returning to New Zealand.

History of reform

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
Overview of recent reform activity	2016 scheme review 2013 scheme review	No recent reform activity, only slight amendments to legislations.	The 2016 scheme review has recently been completed with a number of recommendations.	No recent reform activity, only slight amendments to legislations.
Drivers of reform	- Reduce the time it takes to resolve a claim - Increase the proportion of benefits provided to the most seriously injured road users - Reduce the cost of Green Slip premiums - Reduce the opportunities for claims fraud and exaggeration.	Not applicable	Focus on scheme affordability and efficiency and to identify sustainable savings to assist with offsetting the cost to motorists of the new National Injury Insurance Scheme (Queensland). Review whether previous reforms are having their intended effect and investigate new options to further improve the affordability, efficiency, fairness and flexibility of Queensland's CTP Scheme.	Improve flexibility in the Scheme, help contain rising costs to provide value for money services, and encourage closer working relationships between government agencies and ACC.
Key objectives / intents	This Act establishes a new scheme of compulsory third-party insurance and provision of benefits and support relating to the death of or injury to persons as a consequence of motor accidents. For that purpose, the objects of this Act are as follows: (a) to encourage early and appropriate treatment and care to achieve optimum recovery of persons from injuries sustained in motor accidents and to maximise their return to work or other activities, (b) to provide early and ongoing financial support for persons injured in motor accidents, (c) to continue to make third-party bodily insurance compulsory for all owners of motor vehicles registered in New South Wales, (d) to keep premiums for third-party policies affordable by ensuring that profits achieved by insurers do not exceed the amount that is sufficient to underwrite the relevant risk and by limiting benefits payable for minor injuries,	Not applicable	Not applicable - no changes to legislation arising from the 2016 scheme review	Not applicable

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	(e) to promote competition and innovation in the setting of premiums for third-party policies, and to provide the Authority with a role to ensure the sustainability and affordability of the compulsory third-party insurance scheme and fair market practices, (f) to deter fraud in connection with compulsory third-party insurance, (g) to encourage the early resolution of motor accident claims and the quick, cost effective and just resolution of disputes, (h) to ensure the collection and use of data to facilitate the effective management of the compulsory third-party insurance scheme			
Key changes made to legislation or guidelines through reform process	- Introduction of Motor Accidents Injuries Act 2017: - Establishes a hybrid scheme - Provisions for a statutory income, medical and care benefits for up to six months for all injured people, without any need for fault to be proven. - Removal of access to common law damages for soft-tissue and minor psychological and psychiatric injuries - Reduce opportunities for fraudulent and exaggerated claims by providing statutory benefits for soft-tissue and minor psychological injuries for up to six months and removing access to the common law system - Gives the regulator stronger powers to investigate fraud as well as for prosecution and enforcement, and penalties will be increased for people abusing the system - Regulator power to impose a risk equalisation mechanism to stop insurers targeting low risks and avoiding high risks. - Reduce fraudulent and	Not applicable	In 1994, the Scheme underwent significant reform with the objective of earlier resolution of claims and a strong focus on the provision of early rehabilitation services for claimants. In 1999, a major review of the Scheme culminated in significant legislative amendments in 2000. The key reforms were the introduction of an Affordability Index, a competitive premium model also known as the Vehicle Class Filing Model, streamlining of claims processes and minor changes to claimant benefits. The last review of the Scheme was conducted by MAIC in 2010, the outcome of which focussed on reducing delivery and acquisition costs, and promoting greater price competition between insurers by prohibiting the payment of commissions and other inducements to intermediaries such as motor	Not applicable

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	exaggerated claims - New and enhanced dispute resolution model		dealers. This change was complemented by other initiatives aimed at encouraging consumer choice.	
Observed impacts following reform	Not applicable	Not applicable	Not applicable	Not applicable

Premiums

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
Premium policy	Motor accidents premiums determination guidelines Section 24 of the Motor Accidents Compensation Act 1999 Guiding principles The primary objects of the Act relating to a premium framework are to: - promote competition in the setting of premiums - keep premiums affordable - ensure that insurers charge premiums that fully fund their anticipated liability - ensure that insurers, as receivers of public money that is compulsorily levied, account for their profit margins - SIRA seeks to achieve a balance between these objectives in managing third-party insurance premiums.	The TAC Charge for a motor vehicle varies according to several factors and the charge is determined by VicRoads when the vehicle is registered for the first time. (see rating factors) The Transport Accident Act 1986 provides for TAC Charges to be automatically indexed by inflation (CPI) on 1 July each year.	Since 1 October 2000, the Scheme has operated a competitive Vehicle Class Filing Model, based on a community rating philosophy (all owners of a particular class of vehicle pay the same within the premium range, based on the collective claims experience of the class and regardless of driving history, vehicle usage and the like). This allows the Scheme's licensed insurers to determine and file their premiums for each of the 24 vehicle classes every three months within floor and ceiling premiums set by MAIC. A key objective of this approach has been to facilitate and encourage price competition between insurers. The setting of a floor and ceiling range by MAIC is informed by actuarial analysis and other factors, is intended to ensure premiums are reasonable, neither excessive nor insufficient having regard to the cost of the Scheme. Levies and administration fees are set by the regulator.	When setting Motor Vehicle levies, the ACC try to make sure that the money collected will be enough to cover the cost of injuries – including those injuries which will need lifelong support. Before Motor Vehicle levies are set, the ACC look at the claims received in the past to work out how many claims they expect in the next year, and what they'll cost – not just over the next year, but for the total time a person is injured and needs the help of the scheme.

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
			Rate changes to be approved by the regulator in a rate filing process. Costs of CTP benchmarked against an affordability index and recommendations for scheme changes made by the regulator to the Minister if costs exceed the index.	
Regulations and limits	Full rate filing at least once a year SIRA engages an independent actuary (currently Ernst & Young) to review each insurer's proposal and the actuary provides independent advice to inform the decision making process The MAC Act 1999 provides limited power to reject a premium based on whether we believe that the premium: - will not fully fund the present and likely future claims liability - is excessive - does not conform to premiums determination guidelines, or - is calculated in contravention of the maximum commission allowed to be paid to agents Risk-based pricing within certain limits using objective risk factors (excluding postcode, gender, race, policy duration or GST status). Overall range of discounts and loadings that insurers can apply: - the maximum bonus or discount is 15 per cent (except for drivers over 55 where it's 25 per cent) - the maximum loading varies from one insurer to the next	Not applicable - set by the regulator	The commission first fixes limits of insurer's premium for each class of CTP insurance. (3) The limits consist of a floor amount (below which the premium cannot be set) and a ceiling amount (above which the premium cannot be set). (4) Before the commission fixes the limits, the commission must invite written submissions from— (a) licensed insurers on matters relevant to the fixing of the limits and, in particular, on— (i) current factors and trends influencing the cost of insurance under the statutory insurance scheme; and (ii) any other factors that should, in the opinion of the insurers, influence the permissible range of insurers' premiums for the assessment period; and (b) major organisations representing motorists in Queensland. (5) The commission must at least once in each year obtain an actuarial analysis of the statutory insurance scheme and, at least once in each quarter, obtain an actuarial review of current trends that could affect the financial soundness of the scheme. (6) After considering the financial soundness of the	Not applicable - set by the regulator

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	but is currently around 43 per cent on average		statutory insurance scheme in the light of the most recent actuarial analysis and quarterly review obtained under subsection (5), the submissions made in response to the commission's invitations and other material the commission considers relevant, the commission must— (a) fix the limits of insurer's premium for each class of CTP insurance; and (b) give each licensed insurer a written notice— (i) stating the limits fixed for each class of CTP insurance; and (ii) requiring the insurer to submit its insurer's premiums for each class of CTP insurance for the relevant assessment period on or before a date stated in the notice; and (iii) specifying other requirements with which the insurer's submission must comply. (7) The premiums must be submitted in accordance with requirements specified in the notice within a time limit fixed under a regulation. (8) Each licensed insurer must give the commission written notice of the premiums set by the insurer on or before the date stated in the commission's notice. (9) On receipt of the notice from the insurer, the commission must, within a time limit fixed by a regulation— (a) record the premiums set by the insurer for the relevant assessment period for each class of CTP insurance; and (b) give the insurer a written notice confirming the	

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Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
			insurer's insurance premiums for the relevant assessment period; and (c) notify transport administration of each insurer's insurance premiums for the relevant assessment period. (10) If a licensed insurer— (a) fails to submit premiums for each class of CTP insurance as required by the commission; or (b) sets a premium outside the limits allowed by the commission; the commission may, by written notice to the insurer, withdraw the insurer's licence.	
Rating variables	Primary factors used by the insurers and which affect greenslip prices are as follows: Geographic region Type of vehicle Age of vehicle Vehicle performance Age of vehicle owner Age of vehicle drivers Driving history - Number of traffic offences - Number of demerit points - Number of years licensed Claims history - Level of insurance and no claim bonus - Number of at fault claims Geographic regions and vehicle classifications are designated by SIRA.	Type of vehicle in calculating the cost of larger or commercial vehicles such as a bus, consideration will be given to the intended use, seating and carrying capacity. Location that the vehicle is garaged. The location that the vehicle is garaged will be in one of three risk zones: High, Medium or Low. Risk zones are assigned by postcode. registered owner (pensioner concessions may apply)	The Queensland CTP Scheme utilises a Vehicle Class Filing Model that is based on a community rating philosophy. Under this model, motor vehicles are classified into 24 separate vehicle classes defined by their type and purpose of use, with vehicle owners in each class all paying within the same premium range based on the collective claims experience of the class. This ensures that risks are spread across a vehicle class, providing a similar level of premium affordability within that class. The majority of vehicles are grouped in Class 1 (cars and station wagons). Premiums are determined based on vehicle class, private/business use (Premiums for vehicles used exclusively for private use are not subject to an Input Tax Credit Entitlement and period of cover (3/6/12 months).	Levies are based on vehicle class Light passenger vehicles are risk rated and placed into an ACC risk rating band (1 to 4). These include cars, passenger vans and SUVs that are: classified as a passenger vehicle by NZTA lighter than 3,500kg less than 40 years old. Risk rating is based on vehicle performance in an accident and injuries to people both inside and outside the vehicle in an accident. Light passenger vehicles made before 1976 are classed as either vintage or veteran vehicles, therefore are not subject to the same levy requirements as modern light passenger vehicles. Levies for goods service vehicles and the Fleet Saver programme (businesses with five or more vehicles weighing more than 3,500kg each can lower their ACC motor vehicles levies by

Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
				demonstrating strong safety management practices) Motorcycles: depends on the 'class' of motorcycle (Mopeds, Motorcycles up to 600cc, Motorcycles 601cc+) and whether it's powered by petrol or diesel.

	Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
Premium	Average premium	$658	$503	$369 (October 2016)	NZ $196 (Based on 2015/16 motor vehicle levies including the petrol levy based on annual petrol consumption of 1,200L and 6.90c per L)
	Average weekly earnings	$1,199	$1,092	$1,125	$1,186
	Affordability	43%	35%	23% The Affordability Index – a feature of the Scheme since October 2000 – focuses attention on the overall cost of CTP insurance relative to a selected index of income, Average Weekly Earnings (AWE). A review of the Scheme's affordability is triggered when the highest Class 12 premium filed by insurers exceeds 45 per cent of AWE in Queensland. Once triggered, MAIC is required to make recommendations to the Minister on possible changes to the Scheme.	21%
	Efficiency - amount of premium returned to policyholders as benefits	45% (excludes GST and Lifetime Care and Support Levy)	80%	60%	No information
Claim Frequency	Casualty rate per 1,000 vehicles	3.77	3.80	3.94	3.58
	Casualty rate per 10,000 population	30.63	30.08	32.54	27.39

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	Metrics by Jurisdiction	New South Wales, Australia	Victoria, Australia	Queensland, Australia	New Zealand
	Claim rate per 1,000 vehicles	2.88	3.64	1.78	8.00
	Claim rate per 10,000 population	23.38	28.85	14.66	61.17
Claim Severity	Average casualty claim size	$135,000 (in June 2016$)	$62,736	$112,370	NZD 60,000
Expenses	Expense rate	Claims handling expenses, acquisition, commission and reinsurance are approximately 14% of premium ex GST and levies Levies (or known as the Medical Care and Injury Services (MCIS) levies) included in the premium charged to policyholders are used to pay for: - public hospital and ambulance costs of all road accident victims - all people requiring lifetime care following a motor accident, and - the operation of the regulator in administering the MCA Act	Administration Expenses: $32.9 per policy Motorcycle levy: $1.3 per policy Road Accident Rescue and other offline payments: $4.5 per policy Collection Fees: $8.5 per policy Program Costs: $41.8 per policy	Levies on premium: Statutory Insurance Scheme (SIS) levy National Injury Insurance Scheme Queensland (NIISQ) Levy Hospital and Emergency Services (HES) levy Nominal Defendant levy Administration Fee Premiums for vehicles used exclusively for private use are not subject to an Input Tax Credit Entitlement	Budgeted CHE (Motor Vehicle account) for 2017 of $38.1m: Lodgement ($0.5m) Treatment provider management ($2.7m) Entitlement management ($6.9m) Rehabilitation management ($17.5m) Serious injury ($10.4m) Hearing loss ($0m) The motorcycle safety levy was introduced in July 2010. The levy is an amount of money paid by all motorcycle, scooter and moped owners as part of the licence fee levy. The motorcycle safety levy has been set at $25 per year for each registered motorcycle and/or moped. The purpose of the motorcycle safety levy is to increase investment in initiatives that will reduce motorcyclist's deaths and injuries. The funds are managed by ACC who seek advice from the Motorcycle Safety Advisory Council regarding investment of the levy funds to maximise the benefits for motorcycle riders.

US overview

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Model for mandatory product	Privately and publicly underwritten (with involvement from MCAA) If you find you are not an eligible person for auto insurance, you can apply to the Michigan Automobile Insurance Placement Facility. The Facility was created to offer insurance to those persons who have difficulty finding it through regular companies. This coverage is often described as 20/40/10. These are the minimum amounts of coverage you must have. Sometimes courts award more than these amounts. If this happens, you would be responsible for paying the amount not covered by your policy. To protect themselves, people often buy extra liability insurance. Michigan Catastrophic Claims Association The Michigan Catastrophic Claims Association (MCCA), a private non-profit unincorporated association, was created by the state Legislature in 1978. Michigan's unique auto insurance no-fault law provides unlimited lifetime coverage for medical expenses which result from auto accidents. The MCCA reimburses auto no-fault insurance companies for each Personal Injury Protection (PIP) medical claim paid in excess of a set amount. Currently that amount is $545,000. That means that the insurance company pays the entire claim, but is reimbursed by the MCCA for medical costs over $545,000.	Privately underwritten Pennsylvania is one of a very few states that uses something called "choice no fault" rules. Choice-no-fault is a hybrid of the pure no-fault system. Under this system, drivers have the choice of being insured under either a pure no-fault plan or a modified no-fault plan. Under the pure no-fault plan, one is unable to sue negligent drivers for non-economic damages, and is immune from such suits himself/herself. Under the traditional tort (personal injury suits) rights, one can sue other drivers who have also chosen to retain their tort rights, and in return they can sue him/her. If one that has chosen the modified plan has an accident with a driver insured under the pure no-fault plan, they are both unable to sue the other party	Privately underwritten The Illinois Automobile Insurance Plan (ILAIP) was created to provide automobile insurance coverage to those eligible risks who are unable to obtain coverage in the voluntary market. This Plan became effective on October 1, 1940. All insurers writing automobile insurance in Illinois are required to participate in the ILAIP by subscribing to the Plan. Minimum Requirements = 25,000/50,000/20,000	Privately underwritten Massachusetts is a No-Fault State. Massachusetts is a "no-fault state" with regards to car accidents. This means that your own Massachusetts car accident insurance company pays up to $8,000 of your medical bills, regardless of who was at fault. Under Massachusetts law, you are considered to be at-fault for an accident if your driving behavior at the time of the accident was more than 50% of the reason for the accident.

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Scheme coverage	Modified Comparative Fault – 51% Bar Personal Injury Protection (PIP) Benefits are paid to accident victims by their own insurance company. These include the following: ‣ All reasonable and necessary medical expenses ‣ Up to three years of lost wages. This is subject to an annual cost-of-living adjustment. Higher benefit limits may be purchased. ‣ Up to $20 per day, for a maximum of three+D8 years, for "replacement services." This pays for services which the injured person cannot perform. ‣ Funeral and burial expense benefits. Personal Injury Protection coverage applies to accidents occurring throughout the US and Canada. Property Protection This provides coverage for damage caused by your car to property of others (except moving vehicles), regardless of fault. ‣ Coverage is provided up to $1 million maximum. ‣ Vehicles are excluded from coverage unless properly parked. ‣ Property Protection does not apply to accidents occurring outside the state of Michigan.	Comparative Negligence Modified Comparative Fault – 51% Bar Like most states, Pennsylvania comparative negligence laws allow individuals who've been injured in an accident to recover compensation for damages – even when they are partly at fault for the accident (contributory negligence). However, depending on your degree of shared fault, your ability to recover damages might be affected. The damages you can seek may be limited, or, in some cases, you might not be barred from compensation altogether. Drivers must purchase and maintain car insurance in order to legally drive in Pennsylvania. Limited or Full Tort You can choose to have full or limited tort coverage. Limited tort coverage offers you a savings on your premiums. You are still able to recover all out-of-pocket medical and other expenses; however, you are not able to recover certain damages - such as payments for pain and suffering - unless the injuries meet one of the exceptions to limited tort as defined in Act 6 of 1990, title 75, section 1705 (d). With full tort coverage selection, you retain unrestricted rights to bring suit against the negligent party	Comparative Negligence Modified Comparative, 51% bars recovery Illinois has adopted modified comparative negligence (735 ILCS 5/2-1116) as the standard for recovery of damages. Under modified comparative negligence, an injured party may recover damages only if he/she is less than 50% at fault for the injury or damages. However, the recovered amount may be reduced in proportion to the degree that the injured party was at fault. For example, if the other driver is determined to be 80% at fault and you are determined to be 20% at fault, you can collect for your damages because you were less than 50% at fault. However, the other driver's insurance company might only offer to pay for 80% of your damages.	Modified Comparative Fault – 51% The following Standards of Fault shall be considered determinative that an Operator of a Private Passenger Motor Vehicle was more than 50% at fault for an Accident, unless a showing to the contrary is demonstrated by the evidence presented in the course of review of the At Fault Accident: (01) Collision with a Person or a Lawfully or Unlawfully Parked Vehicle. (03) Rear End Collision. (05) Out of Lane Collision (07) Failure to Signal. (08) Failure to Proceed with Due Caution from a Traffic Control Signal/Sign (09) Collision on Wrong Side of Road. (10) Operating in the Wrong Direction. (11) Collision at an Uncontrolled Intersection. (14) Collision While in the Process of Backing Up. (15) Collision While Making a Left Turn or U-turn Across the Travel Path of a Vehicle Traveling in the Same or Opposite Direction. (17) Leaving or Exiting from a Parked Position, Parking Lot, Alley or Driveway. (18) Opened or Opening Vehicle Door(s). (19) Single Vehicle Collision. (20) Failure to Obey the Rules and Regulations for Driving (21) Unattended Vehicle Collision. (26) Collision While Merging onto a Highway, or into a Rotary (27) Non-contact Operator Causing Collision (29) Failure to Yield the Right of Way to Emergency Vehicles as is Required by Law. (31) Collision at a "T" Intersection.

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Benefits available	Fault-based (with exceptions)	Medical benefits regardless of fault - minimum limit of $5,000. Higher limits are available. Full tort: 1. Individual pays higher premium 2. Individual can bring a claim for any injury suffered as a result of auto accident Limited tort: 1. Policy premium is less than full tort 2. Individual cannot seek recovery for non-economic damages unless the injuries suffered fall within the definition of "serious injury"	Medical Payments Covers medical and funeral expenses for you or your passengers if injured or killed in an accident in your vehicle. It also covers you and your family members if struck by a vehicle while walking or while riding in another vehicle. This coverage pays even if you cause the accident.	Compulsory Insurance Coverages Part 1 - Bodily Injury To Others Part 2 - Personal Injury Protection Part 3 - Bodily Injury Caused By An Uninsured Auto Part 4 - Damage To Someone Else's Property Massachusetts law requires a company that provides Compulsory Insurance Coverages to make a mandatory offer to issue to any person so insured additional coverages consisting of: 1. Limits up to $35,000 each person and $80,000 each accident for Parts 3, 5 and 12. 2. $5,000 each person for Part 6. Part 6 - Medical Payments The basic limit is $5,000 each person. Higher limits are available for all motor vehicles rated in this manual. Motorcycle limits are available from $500 to $50,000. This coverage does not duplicate expenses that are paid or payable under Personal Injury Protection.
Regulatory body	Michigan Department of Insurance http://www.michigan.gov/difs/	Pennsylvania Department of Insurance http://www.insurance.pa.gov/Pages/default.aspx	Illinois Department of Insurance http://insurance.illinois.gov/	Massachusetts Department of Insurance http://www.mass.gov/ocabr/insurance/providers-and-producers/doi-regulatory-info/insurance-regulations-and-laws/
Legislation/Acts	‣ Contracts with State and Local Government subject to Patient's Right to Independent Review ‣ Coordination of Benefits Act ‣ Credit Insurance Act ‣ Emergency Insurance Legislation	See link for all insurance acts: http://www.pacode.com/secure/data/031/031toc.html	‣ 215 ILCS 5/Illinois Insurance Code. ‣ 215 ILCS 97/Illinois Health Insurance Portability and Accountability Act. ‣ 215 ILCS 100/Reinsurance Intermediary Act.	Massachusetts Laws ‣ MGL c.90, s.34A-34R Compulsory Motor Vehicle Liability Insurance ‣ MGL c.175, s.4E Prohibits use of credit information in issuing or renewing auto insurance

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	‣ Health Benefit Agent Act ‣ Indemnification Reserve Fund Act ‣ Insurance Code of 1956 ‣ Intergovernmental Contracts between Municipal Corporations ‣ Interstate Insurance Product Regulation Compact ‣ Non-Profit Dental Care Corporations ‣ Non-profit Health Care Corporation Reform Act ‣ Office Agent; Set-Off For Damages ‣ Patient's Right to Independent Review Act ‣ Prudent Purchaser Act ‣ Public Employees Health Benefit Act ‣ Third Party Administrator Act ‣ Worker's Disability Compensation Act of 1969		‣ 215 ILCS 107/Producer Controlled Insurer Act. ‣ 215 ILCS 113/Employee Leasing Company Act. ‣ 215 ILCS 120/Farm Mutual Insurance Company Act of 1986. ‣ 215 ILCS 121/Navigator Certification Act. ‣ 215 ILCS 122/Illinois Health Benefits Exchange Law. ‣ 215 ILCS 123/Health Care Purchasing Group Act. ‣ 215 ILCS 125/Health Maintenance Organization Act. ‣ 215 ILCS 130/Limited Health Service Organization Act. ‣ 215 ILCS 134/Managed Care Reform and Patient Rights Act. ‣ 215 ILCS 136/Portable Electronics Insurance Act. ‣ 215 ILCS 138/Uniform Prescription Drug Information Card Act. ‣ 215 ILCS 139/Uniform Health Care Service Benefits Info. Card Act. ‣ 215 ILCS 140/Product Liability Insurance Act. ‣ 215 ILCS 145/Property Fire Loss Act. ‣ 215 ILCS 150/Religious and Charitable Risk Pooling Trust Act. ‣ 215 ILCS 152/Service Contract Act. ‣ 215 ILCS 153/Structured Settlement Protection Act. ‣ 215 ILCS 155/Title Insurance Act. ‣ 215 ILCS 157/Use of Credit Information in Personal Insurance Act. ‣ 215 ILCS 160/Vision Service Plan Act. (Repealed by P.A. 90-177) ‣ 215 ILCS 165/Voluntary Health Services Plans Act. ‣ 215 ILCS 175/Organ Transplant Medication Notification Act. ‣ 215 ILCS 180/Health Carrier External Review Act.	‣ MGL c.175, s.113A-113U Compulsory Motor Vehicle Liability Insurance Massachusetts Regulations ‣ 211 CMR 74 pdf format of 211 CMR 74 ‣ Standards of Fault ‣ Lists motor vehicle accident "situations in which fault is presumed to be more than 50%." ‣ 211 CMR 79 pdf format of 211 CMR 79 ‣ Private Passenger Motor Vehicle Insurance Rates ‣ Managed competition" insurance rate regulations cover policies with renewal dates beginning April 1, 2008 ‣ 211 CMR 88 pdf format of 211 CMR 88 ‣ SDIP Surcharge Appeals ‣ 211 CMR 134 pdf format of 211 CMR 134 ‣ Safe Driver Insurance Plan ‣ Lists minor and major traffic accidents and offenses which subject the violator to "points" on their auto insurance ‣ 211 CMR 135 pdf format of 211 CMR 135 ‣ Requirements Regarding Referrals to Motor Vehicle Glass Repair Shops

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Interaction with Health System / Social Security System	‣ Personal protection insurance benefits are overdue if not paid within 30 days after an insurer receives reasonable proof of the fact and of the amount of loss sustained ‣ If reasonable proof is not supplied as to the entire claim, the amount supported by reasonable proof is overdue if not paid within 30 days after the proof is received by the insurer ‣ An overdue payment bears simple interest at the rate of 12% per annum ‣ No code, regulation, statute noted. Service contract between patient and health provider may imply lien protection ‣ The state department and the department of community health are subrogated to any right of recovery that a patient may have for the cost of hospitalization, pharmaceutical services, physician services, nursing services, and other medical services ‣ The patient or other person acting in the patient's behalf shall execute and deliver an assignment of claim or other authorizations as necessary to secure the right of recovery to the department or the department of community health ‣ If a payment is made, the state department or the department of community health, to enforce its subrogation right, may do either of the following: (a) intervene or join in an action or proceeding brought by the injured against the third person who may be liable for the injury (b) institute and prosecute a legal proceeding against a third person who may be liable for the injury ‣ The injured individual shall notify the state department or the department of community health of the action or proceeding entered into upon	‣ Notice and lien information request must be provided in writing and sent by certified or registered mail to Department of Public Welfare (DPW) ‣ DPW will deem a third party or insurer to have notice if the beneficiary's MA status is shown in records received by the third party or insurer ‣ Health insurance provider may place a lien on a claimant's tort recovery ‣ Benefits are overdue if not paid within 30 days after the insurer receives reasonable proof of the amount of benefits ‣ Rate of 12% per annum from the date the benefits become due may be assessed as a penalty	‣ Failure to make periodic payments within the period of time specified in item shall entitle the health care professional or health care facility to interest at the rate of 9% per year from the date payment was required ‣ Shall make all payments for health services within 30 days after receipt of due proof of loss ‣ An insured, insured's assignee, health care professional, or health care facility shall be notified of any known failure to provide sufficient documentation for a due proof of loss within 30 days after receipt of the claim for health care services ‣ Every health care provider that renders any service in the treatment, care, or maintenance of an injured person shall have a lien upon all claims and causes of action ‣ The total amount of all liens under this Act, however, shall not exceed 40% of the verdict, judgment, award, settlement, or compromise secured by or on behalf of the injured person	‣ Personal injury protection benefits and benefits due from an insurer assigned shall be due and payable as loss accrues, upon receipt of reasonable proof of the fact and amount of expenses and loss incurred ‣ Insurer shall commence medical payments within 10 days or give written notice of its intent not to make such payments, specifying reasons for said nonpayment, but an insurer may agree to a lump sum discharging all future liability for such benefits on its own behalf and the insured ‣ No insurer shall refuse to pay a bill for medical services submitted by a practitioner registered or licensed. If such refusal is based solely on a medical review of the bill or of the medical services underlying the bill, which review was requested or conducted by the insurer, unless the insurer has submitted, for medical review, such bill or claim to at least one practitioner registered or licensed ‣ In any case where benefits due and payable remain unpaid for more than 30 days, any unpaid party shall be deemed a party to a contract with the insurer responsible for payment and shall therefore have a right to commence an action in contract for payment of amounts due ‣ If the unpaid party recovers a judgment for any amount due and payable by the insurer, the court shall assess against the insurer in addition thereto costs and reasonable attorney's fees ‣ Hospital operated by the commonwealth which furnished medical or other services to any person injured in an accident shall have a lien for the reasonable and necessary charges

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	commencement of the action or proceeding			
Fraud - estimated costs	Property/casualty fraud in Michigan totals an estimated $900 million, or about 10 percent of claims. Adding other types of insurance to the equation, like health, life and specialty insurance, makes the total cost of fraud almost $3 billion. (2014)	‣ Each insurer licensed to write motor vehicle insurance in this Commonwealth shall institute and maintain a motor vehicle insurance antifraud plan ‣ All applications for insurance, renewals and claim forms shall contain a statement that clearly states in substance the following: "Any person who knowingly and with intent to injure or defraud any insurer files an application or claim containing any false, incomplete or misleading information shall, upon conviction, be subject to imprisonment for up to seven years and payment of a fine of up to $15,000."	‣ The Director of Department of Insurance is authorized to require insurers to report factual information in their possession that is pertinent to suspected fraudulent insurance claims	‣ Massachusetts launched task forces in 13 communities against widespread staged-crash rings amid public outcry after 65-year-old grandmother Altagracia Arias died in a setup crash in 2003. ‣ Drivers in the 13 communities have saved $875 in auto premiums per year; ‣ Drivers in Lawrence — the "worst hotbed of fraudulent claims" — have saved more than $68 million; ‣ Larger chiropractors in Lawrence have decreased in both clinic counts and billings by up to 90 percent. High-volume physical therapy clinics (billings exceeding $100,000 annually) have been eliminated, and attorney involvement in PIP claims has dropped; and ‣ Staged accidents in Massachusetts have been reduced dramatically as people around the state, who used to be involved in fraudulent activities, have taken notice of the crackdown and altered their activities. (Insurance Fraud Bureau of Massachusetts, April 2013)
Population (millions)	9.9	12.8	12.8	6.8
Exposure/ Number of registered vehicles (millions)	8.3	10.6	10.6	5.1

Benefits available

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Overview of benefits	Residual Liability This provides protection if you are sued or legally responsible: ‣ In accidents involving death, serious impairment of body function or permanent, serious disfigurement. ‣ When actual economic losses sustained in an accident exceed the PIP benefits available. ‣ In accidents occurring outside of Michigan, for property damage and bodily injury. The required limits of this coverage are $20,000 for one person's injury, $40,000 for all persons injured in one accident and $10,000 Personal Injury Protection (PIP) - PIP pays all reasonable and necessary medical expenses if you are hurt in an auto accident, including wage loss and replacement services up to three years. Property Protection (PPI) - PPI pays up to $1 million for damage your vehicle does in Michigan to other people's property, such as buildings and fences MCAA covers and reimburses carriers for PIP claims above $545,000	Medical Benefits This coverage pays the medical bills for you and others who are covered by your policy, regardless of fault, if there are injuries resulting from an accident. The minimum limit is $5,000. Higher limits are also available. Bodily Injury Liability If you injure someone in an auto accident, this coverage pays damages for which you are liable, such as medical and rehabilitation expenses. The minimum limit is $15,000/$30,000. The $15,000 pays for injuries to one person, while the $30,000 represents the total available for one accident. Higher limits are also available. Property Damage Liability If you damage someone's property (such as his or her car) in an accident and you are at fault, this coverage pays for repairs to that property. The minimum limit is $5,000. Higher limits are also available	Liability Coverage – Bodily Injury (BI) – Pays for costs due to injury or death to a pedestrian(s) or person(s) in another car. It may also cover your passengers' injury costs as long as they aren't members of your household. Illinois law (625 ILCS 5/7-203) requires BI limits of at least $25,000 per person per accident and $50,000 total per accident. Property Damage (PD) – Pays for damage to another person's car or property such as fences, buildings, utility poles, signs, and trees. Illinois law (625 ILCS 5/7-203) requires PD liability limits of at least $20,000 per accident Uninsured Motorist Bodily Injury Coverage (UM) – Currently, Illinois uninsured motorist bodily injury minimum limits are $25,000 per person and $50,000 per accident. For additional premium, you may buy higher limits to pay for claims that exceed those amounts. Underinsured Motorist Bodily Injury Insurance (UIM) – Illinois law (215 ILCS 5/143a-2) requires this type of coverage if you purchase higher limits of uninsured motorist bodily injury coverage (UM).	Part 1 - Bodily Injury To Others The basic limits are $20,000 each person and $40,000 each accident. Part 2 - Personal Injury Protection The basic limit is $8,000 for each person. Deductible options are available. Part 3 - Bodily Injury Caused By An Uninsured Auto The basic limits are $20,000 each person and $40,000 each accident. Increased limits are available. The limits may not exceed the limits of Part 5, or if Part 5 is not purchased, Part 1 of this policy. This coverage does not duplicate expenses that are paid or payable under Personal Injury Protection. Part 4 - Damage To Someone Else's Property The basic limit is $5,000 each accident. Increased limits are available.
Non economic loss benefits	‣ A person remains subject to tort liability for noneconomic loss caused by his or her ownership, maintenance, or use of a motor vehicle only if the injured person has suffered death, serious impairment of body function, or permanent serious disfigurement ‣ The issues of whether the injured person has suffered	PA is a choice-no-fault state which a tort option can be selected for private passenger vehicles. ‣ Full Tort: Individual can bring a claim for any injury suffered as a result of auto accident ‣ Limited Tort: Individual cannot seek recovery for non-economic damages unless the injuries	Illinois follows a traditional "fault" or "tort" system. No restrictions to pursue a civil action against a party who may have caused physical injury or property damage in a motor vehicle accident	The law allows you to file an insurance claim for pain and suffering compensation. This amount is separate from lost wages and other medical expenses, such as x-rays, medications, and hospital visits. Plaintiff may recover damages for pain and suffering, including mental suffering associated with

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	serious impairment of body function or permanent serious disfigurement are questions of law for the court ‣ Damages shall be assessed on the basis of comparative fault, except that damages shall not be assessed in favor of a party who is more than 50% at fault ‣ Damages up to $1,000.00 to a motor vehicle, to the extent that the damages are not covered by insurance ‣ "serious impairment of body function" means an objectively manifested impairment of an important body function that affects the person's general ability to lead his or her normal life	suffered fall within the definition of "serious injury" (serious injury is defined as "a personal injury resulting in death, serious impairment of body function or permanent serious disfigurement")		such injury, sickness or disease, only if the expenses are determined to be in excess of two thousand dollars unless such injury, sickness or disease (1) causes death, or (2) consists in whole or in part of loss of a body member, or (3) consists in whole or in part of permanent and serious disfigurement, or (4) results in such loss of sight or hearing
Economic loss benefits	A Michigan no-fault policy provides unlimited medical and rehabilitation benefits. It provides wage loss benefits for up to three years, and $20 per day for replacement services if you are injured in an auto accident, regardless of fault. In exchange for these benefits, Michigan motorists gave up the right to sue in auto accidents except when someone is killed or very seriously injured. Because of this, disputes over who was at-fault in an accident will not hold up payment of medical bills. Michigan is unique in that damage to vehicles also falls under the no-fault system. This, too, saves time and money in claims payment. Michigan drivers must buy collision and/or comprehensive insurance to cover damage to their own car.	See above	See above	Personal Injury Protection (PIP) Some states have Personal Injury Protection or "PIP" regulations requiring drivers to carry PIP insurance. This is an extension of auto insurance that covers medical expenses, lost wages and/or other damages. Massachusetts requires drivers to purchase PIP insurance. The minimum PIP coverage amounts for Massachusetts are $8,000.00
Medical/Treatment/Care benefits	Michigan has the highest no-fault medical benefits in the nation. The Michigan no-fault insurance policy must cover all reasonable and necessary charges for lifetime medical care, including rehabilitation. No other state in	Medical Benefits This coverage pays the medical bills for you and others who are covered by your policy, regardless of fault, if there are injuries resulting from an accident.	Medical Payments Covers medical and funeral expenses for you or your passengers if injured or killed in an accident in your vehicle. It also covers you and your family members if struck by a vehicle	Personal Injury Protection (PIP): Your own Massachusetts car accident insurance company pays up to $8,000 of your medical bills, regardless of who was at fault. These benefits are called First-Party Benefits.

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	the country provides such high benefits. The Michigan policy also provides up to three years of lost wages and replacement services. Under no-fault, these benefits usually are paid without the need to file a lawsuit. (2014) Michigan is the only state to offer unlimited lifetime medical care for auto-related injuries under its no-fault auto insurance system.	The minimum limit is $5,000. Higher limits are also available. Extraordinary Medical Benefits This pays for medical and rehabilitation expenses that exceed $100,000, up to a maximum limit of $1.1 million.	while walking or while riding in another vehicle. This coverage pays even if you cause the accident.	
Death/Funeral benefits	No wrongful death caps related to civil actions involving motor vehicle accidents Funeral and burial expense benefits. Personal Injury Protection coverage applies to accidents occurring throughout the US and Canada. (Optional)	General Assembly cannot limit the amount to be recovered for injuries resulting in death Funeral Benefits pay, up to the limit specified in the policy, for funeral expenses if you or a family member dies as a result of an auto accident, regardless of who was at fault in the accident. (Optional)	No cap on wrongful death damages Optional: Accidental Death Benefit – Pays a death benefit if the insured dies because of an auto accident (optional)	*There are no caps on wrongful death Injury to a person that causes death, shall be liable in damages in the amount of: ‣ Fair monetary value of the decedent to the persons entitled to receive the damages recovered, including but not limited to compensation for the loss of the reasonably expected net income, services, protection, care, assistance, society, companionship, comfort, guidance, counsel, and advice of the decedent to the persons entitled to the damages ‣ Reasonable funeral and burial expenses of the decedent ‣ Punitive damages in an amount of not less than $5,000 in such case as the decedent's death was caused by the malicious, willful, wanton or reckless conduct of the defendant or by the gross negligence of the defendant
Other benefits	Michigan (pure no-fault) law requires you to have no-fault automobile insurance on your car. If you have an accident, this required insurance pays for injuries to people and for damages your car does to other people's property and to properly parked cars.	Some companies offer a combined single limit of $35,000 which meets the bodily injury liability and property damage liability minimum requirements **The Catastrophic Loss Benefits Continuation Fund** (CAT Fund) continues benefits for medical	‣ Accidental Death Benefit – Pays a death benefit if the insured dies because of an auto accident. ‣ Custom/Non-Factory Equipment – Covers customized features found in conversion vans, as well as tape decks, CD players, CB radios, cellular phones, etc. added after the vehicle left the factory.	‣ Part 5 - Optional Bodily Injury To Others ‣ The basic limits are $20,000 each person and $40,000 each accident. Increased limits are available. ‣ Part 6 - Medical Payments ‣ The basic limit is $5,000 each person. Higher limits are available for all motor vehicles

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	Michigan is the only state to offer unlimited lifetime medical care for auto-related injuries under its no-fault auto insurance system.	treatment and rehabilitative services previously provided by the Catastrophic Loss Trust Fund. Except for workers' compensation the CAT Fund is the primary payor for eligible claimants and coordinates benefits with health and other insurance carriers. Insurers may confirm whether the CAT Fund is the primary payor on a particular claim by contacting the current third party administrator. The maximum benefit paid by the CAT Fund on behalf of any one eligible claimant is $50,000 per annual limit year with a $1,000,000 lifetime aggregate. During the first 18 months after the motor vehicle accident, benefits are provided without regard to the $50,000 per annual period limit but subject to the $1,000,000 lifetime aggregate.	‣ Gap Coverage for Leased or Financed Vehicles – Pays the difference between your vehicle's actual cash value and what you still owe on your loan or lease. ‣ Medical Payments – Covers medical and funeral expenses for you or your passengers if injured or killed in an accident in your vehicle. It also covers you and your family members if struck by a vehicle while walking or while riding in another vehicle. This coverage pays even if you cause the accident. ‣ Physical Damage/Repair/Replace Coverage – Pays for a new vehicle if the cost to repair your vehicle is more than the value of a new car. The endorsement is usually available only during the first three model years. ‣ Rental Reimbursement – Pays a specific amount per day (e.g. $15) to rent a vehicle while yours is being repaired due to a covered loss. ‣ Towing – Pays all or part of the cost to tow your disabled vehicle to a repair shop. ‣ Uninsured Motorist Property Damage (UMPD) – Covers damage to your vehicle caused by an identified, at-fault, uninsured driver. If you don't' have collision coverage, this coverage is available for a maximum of $15,000 and subject to a $250 deductible.	rated in this manual. ‣ Motorcycle limits are available from $500 to $50,000. This coverage does not duplicate expenses that are paid or payable under Personal Injury Protection. ‣ Part 7 – Collision ‣ This coverage is subject to a basic deductible of $500. Higher deductibles and a Waiver of Deductible are available at the option of the insured. Waiver of Deductible SA-2932/MAEP must be attached. This coverage is written on an actual cash value. ‣ Part 8 - Limited Collision ‣ This coverage is subject to a basic deductible of $500. Other deductibles are available at the option of the insured. ‣ Part 9 - Comprehensive ‣ This coverage is subject to a basic deductible of $500. Higher deductibles are available at the option of the insured. ‣ A separate $100, deductible is also available at the option of the insured. This coverage is written on an actual cash value basis. ‣ Part 10 - Substitute Transportation

History of reform

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Overview of recent reform activity	Lawmakers have considered changes to the no-fault law for the past several years, including last session, when former House Speaker Jase Bolger made a high-profile push. The substitute bill approved in April 2017, along with several amendments that were adopted, changed the legislation substantially. Perhaps most notably, instead of tying reimbursement rates for medical care to worker's compensation rates, the new legislation ties rates to an average among commercial carriers. http://www.mlive.com/lansing-news/index.ssf/2015/04/senate_makes_major_changes_to.html A proposal, **HB 4612**, was approved by the Michigan House Insurance Committee at the beginning of May 2013 but stalled. This bill would cap benefits provided under the personal injury protection portion of the no-fault law at $1 million, ending an era of unlimited benefits that has driven up costs to what many consider are unsustainable levels. Even with a cap, Michigan's benefits would still be more generous than those of any other state. New York ranks second, with $50,000. **Coalition Protecting Auto No-Fault and Brain Injury Association of Michigan v MCCA, Michigan Court of Appeals** In late 2011 and early 2012, the MCCA denied Freedom of Information Act ("FOIA") requests from the Coalition	Not applicable	Safety initiatives recently in place are: -Click It or Ticket -Don't Text and Drive -Start Seeing Motorcycles These are a few of the programs that provide a means to educate the public and make them responsible and safe users of Illinois roadways.	Private Passenger Motor Vehicle Insurance Rates. The amendments simplify the regulation by removing references to procedures that applied only to the transition period from a market in which the Commissioner fixed-and-established private passenger motor vehicle insurance rates to a competitive market. The proposed changes do not make substantive changes to the regulation as it applies to the competitive market. Procedures for the Appeal of Insurer At-Fault Accident Determinations and the Conduct of Hearings on Insurer At-Fault Accident Determinations. The current regulation explicitly establishes procedures for the filing, review, and conduct of hearings on appeals of an insurer's determination that an operator was at fault in a private passenger motor vehicle accident pursuant to the Safe Driver Insurance Plan approved in a fixed-and-established market. It does not address procedures for appeals arising in a competitive market. The proposed amendments establish procedures that will govern the filing, review, and conduct of hearings on appeals of an insurer's determination that an operator is at fault in an accident, either in accordance with the insurer's Merit Rating Plan or with the Safe Driver Insurance Plan. The proposed changes also improve the readability, organization, and ease-of-use of the regulation. Safe Driver Insurance and Merit Rating Plans. 211 CMR 134.00

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	Protecting Auto No-Fault ("CPAN") and the Brain Injury Association of Michigan ("BIAMI") on the ground that the MCCA is exempt from FOIA by statute. Michigan Catastrophic Claims Association (MCCA) must comply with Freedom Of Information Act (2013)			was promulgated to implement the Safe Driver Insurance Plan approved by the Commissioner as part of the process to fix-and-establish private passenger motor vehicle insurance rates and later amended to reflect the shift to a competitive market and the adoption by insurers of their own Merit Rating Plans. The proposed changes reflect the effect of 2015 legislation requiring the Merit Rating Board, the administrator of data reported pursuant to 211 CMR 134.00, to adopt new parameters for classifying motor vehicle accidents as "major" or "minor." Additional changes clarify the regulation and its application in a fixed-and-established rating market and in a competitive market.
Drivers of reform	Rising claim costs and rising auto insurance premiums. Recent data from National Association of Insurance Commissioners (2013) draws a stark contrast between Michigan and its surrounding states. Michigan is the 6th most expensive state for auto insurance, outpacing its neighboring states by hundreds of dollars. Insurance premiums in Michigan have increased more rapidly than those costs in other states. In 1997, Michigan had the 18th highest costs of auto insurance in nation. By 2007, Michigan was the 11th highest state. By 2010, Michigan ranked the 8th highest state and is now the sixth most costly state.	Not applicable	Not applicable	Not applicable
Key objectives/intents	Not applicable	Not applicable	Not applicable	Not applicable
Key changes made to	Not applicable	Not applicable	Not applicable	Not applicable

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
legislation or guidelines through reform process				
Observed impacts following reform	Other attempts to lower the price of auto insurance in the state have not met with success. Michigan is unique among no-fault states in that its no-fault law offers unlimited medical care under its PIP coverage and in that it does not use medical fee schedules (maximum fees that can be charged for common types of medical treatment for auto accidents, similar to the fees set under the state's workers compensation system). Claim costs are rising higher in MI than anywhere else in the US. Many believe that the main reason no-fault PIP medical claim costs are rising so fast is because Michigan's no-fault policy system does not have a medical-provider fee schedule that controls the price that hospitals and doctors can charge for treating auto accident victims.	Not applicable	Not applicable	Not applicable

Premiums

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Premium policy	State law sets forth the factors companies use when setting their auto rates. More rating factors are allowed for group policies than for non-group policies as long as they are specified in the company's underwriting rules and applied uniformly and consistently to all of the company's policyholders. Some of the factors that companies can use in setting rates include the type of vehicle you own, your driving record, your age or length of driving	Various factors can change the cost of your auto premium, including adding or increasing coverages, adding another vehicle to the policy, replacing an older vehicle with a newer one, adding a new driver, changing the usage of the vehicle (driving to work, using for business purposes), claims, moving violations, increasing the number of miles per year and moving to another area. In addition, your company may have been granted a rate	‣ Age, gender, and marital status – Statistics show certain groups of drivers (for example, young unmarried males) have more accidents. A higher chance of loss means more premium. ‣ Coverage limits – The more insurance you buy, the higher the premium will be. ‣ Driving record – Drivers with accidents and tickets usually pay higher premiums than those with good driving records. ‣ Household driving information – The ages and driving records of	The Massachusetts Safe Driver Insurance Plan (SDIP) is a program that aims to decrease traffic accidents by requiring unsafe drivers to pay higher insurance premiums and offering discounts to safe drivers. SDIP rate discounts and increases specifically affect your liability and optional collision coverages. Your driving history directly affects your SDIP rating, as well as the effect of that rating on your premium. The MA RMV provides a detailed chart that

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Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	experience, daily or weekly commuting mileage, and number of vehicles insured or number of licensed drivers in the household. Michigan law does not provide auto insurance companies the ability to negotiate discounted services with health providers. In addition, it is difficult to project future medical costs because auto insurers could pay benefits for a seriously injured person for the rest of their life. The high cost of medical expenses and the unlimited nature of Michigan no-fault benefits are some of the reasons premiums will increase.	increase since your renewal. Some rate increases are not due to a specific incident or condition of your policy but rather, are applied to all policyholders with the company	other drivers in your household may affect the premium. Most auto insurance policies cover family members while driving your car. You may jeopardize your coverage if you withhold this information. ‣ Location – Since heavily populated areas have more traffic, thefts, and vandalism, city drivers may pay higher premiums than rural drivers. ‣ Type of vehicle – Certain vehicles cost more to insure because they're more likely to be damaged in an accident, cost more to repair, or are frequently stolen. ‣ Use of vehicle, how far you drive to work, and annual mileage – Drivers who commute long distances or drive more miles per year may pay more than those who commute shorter distances and drive fewer miles per year. ‣ Credit history – Companies may consider your financial stability and charge higher premiums based on your financial status (i.e., credit card history, amount of credit, how timely you pay your bills, etc.).	shows how ratings affect your premium. Massachusetts car insurance companies have the option of using either the SDIP merit-based driver rating system, or their own merit-based rating system to help determine your insurance premium. Under the SDIP merit-based rating system, new drivers are automatically assessed higher premiums due to their lack of experience. Additionally, you will receive surcharge points for incidents such as car accidents or traffic violations.
Regulations and limits	Minimum Financial Responsibility = 20,000/40,000/10,000	Minimum Financial Responsibility = 15,000/30,000/5,000	Minimum Financial Responsibility = 25,000/50,000/20,000	Minimum Financial Responsibility = 20,000/40,000/5,000
Rating variables	Some of the factors that companies can use in setting rates include: ‣ -the type of vehicle you own ‣ -address ‣ -you're driving record ‣ -your age or length of driving experience ‣ -daily or weekly commuting mileage ‣ -number of vehicles insured or number of licensed drivers in the household. Companies use the premium they	Various factors can change the cost of your auto premium, including: ‣ adding or increasing coverages ‣ adding another vehicle to the policy ‣ replacing an older vehicle with a newer one ‣ adding a new driver ‣ changing the usage of the vehicle (driving to work, using for business purposes) ‣ claims ‣ moving violations ‣ increasing the number of miles	‣ 'Age, gender, and marital status – Statistics show certain groups of drivers (for example, young unmarried males) have more accidents. A higher chance of loss means more premium. ‣ Coverage limits – The more insurance you buy, the higher the premium will be. ‣ Driving record – Drivers with accidents and tickets usually pay higher premiums than those with good driving records. ‣ Household driving information – The ages and driving records of other drivers in your household	‣ 'Years' Experience ‣ Driving Record ‣ Good Student Discount Round ‣ Distant Student Discount Round ‣ Accident Prevention Discount ‣ Driving Training Discount Round ‣ Average Driver Factor ‣ Base Rate Round ‣ Territory Round ‣ Value Class ‣ Model Year Round ‣ Usage Round ‣ Vehicle-Drive r Relationship ‣ Child-Youth ‣ Age of Vehicle

Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
	collect to pay claims. In setting premiums, companies must estimate how much money they will pay for injuries related to accidents and for the repair or replacement of vehicles. Michigan law does not provide auto insurance companies the ability to negotiate discounted services with health providers. In addition, it is difficult to project future medical costs because auto insurers could pay benefits for a seriously injured person for the rest of their life. The high cost of medical expenses and the unlimited nature of Michigan no-fault benefits are some of the reasons premiums will increase.	per year and moving to another area. In addition, your company may have been granted a rate increase since your renewal. Some rate increases are not due to a specific incident or condition of your policy but rather, are applied to all policyholders with the company.	may affect the premium. Most auto insurance policies cover family members while driving your car. You may jeopardize your coverage if you withhold this information. ‣ Location – Since heavily populated areas have more traffic, thefts, and vandalism, city drivers may pay higher premiums than rural drivers. ‣ Type of vehicle – Certain vehicles cost more to insure because they're more likely to be damaged in an accident, cost more to repair, or are frequently stolen. ‣ Use of vehicle, how far you drive to work, and annual mileage – Drivers who commute long distances or drive more miles per year may pay more than those who commute shorter distances and drive fewer miles per year. ‣ Credit history – Companies may consider your financial stability and charge higher premiums based on your financial status (i.e., credit card history, amount of credit, how timely you pay your bills, etc.)	EXCLUSIONS IN RATING (13) No credit information contained on a consumer report obtained from a consumer reporting agency pursuant to M.G.L. c. 93, § 50 et seq. shall be used in private passenger motor vehicle insurance:

	Metrics by Jurisdiction	Michigan	Pennsylvania	Illinois	Massachusetts
Premium	Average premium	$1,227	$858	$775	$1,035
	Average weekly earnings	$884	$966	$1,023	$1,247
	Affordability	139%	89%	76%	83%
	Efficiency - amount of premium returned to policyholders as benefits	No information	No information	No information	No information
Claim Frequency	Casualty rate per 1,000 vehicles	9.08	7.85	8.08	No information
	Casualty rate per 10,000 population	75.66	64.99	66.60	No information
	Claim rate per 1,000 vehicles	6.00	4.42	5.29	10.33

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	Claim rate per 10,000 population	50.02	36.60	43.60	77.06
Claim Severity	Average casualty claim size	Bodily Injury - $52,960.60 PIP - $52,263.27 (42,145 claims in 2013) From 2005-2013, the average payment per paid PIP claim increased 72.2 percent in Michigan, from $25,997 to $52,960.60.	$19,114.38	$16,952.43	$11,918.08
Expenses	Expense rate - Loss Ratio	73.65	72.87	73.83	54.04

Canadian overview

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Model for mandatory product	Publically underwritten	Privately underwritten	Publically underwritten	Privately underwritten	Privately underwritten	Privately underwritten	Publically underwritten
Scheme coverage	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - No increase in limit between non-minor injury and catastrophic injury - Uninsured drivers	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - No increase in limit between non-minor injury and catastrophic injury, lower cap on minor injury claims - Uninsured drivers	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - Increased impairment benefits available to catastrophically injured, otherwise no increase in limit between non-minor injury and catastrophic injury - Uninsured drivers	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - No increase in limit between non-minor injury and catastrophic injury, lower cap on minor injury claims - Uninsured drivers	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - No increase in limit between non-minor injury and catastrophic injury, lower cap on minor injury claims - Uninsured drivers	Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - Higher medical rehabilitation and attendant care limit if injury of claimant deemed to be catastrophic according to regulation - Uninsured drivers	Two types of personal auto injury insurance in Saskatchewan - No Fault and Tort Coverage. Unless chosen otherwise, No Fault Coverage is default. Coverage applicable to: - Driver at-fault/not-at fault - Passenger and other road users - Limits vary depending on whether No Fault or Tort Coverage chosen - Uninsured drivers
Benefits available	Fault-based Common law with no restrictions	Hybrid	No-Fault	Hybrid	Hybrid	Hybrid	Choice between No-Fault and Tort
Regulatory body	The B.C. Utilities Commission (BCUC) was appointed in 2003 as the independent regulator for ICBC with the responsibility to approve rates for Basic insurance. The BCUC's primary responsibility is the regulation of BC's natural gas and electricity utilities. As well as approving rates, BCUC also ensures Basic product is adequate, efficient and reasonable.	The Alberta Automobile Insurance Rate Board (AIRB). AIRB's primary role is to regulate automobile insurance rating programs for private passenger vehicles for both basic and additional coverage. The Board's vision is to foster an efficient and effective automobile insurance market with fair and predictable rates.	The Public Utilities Board of Manitoba (PUB) is an independent, quasi-judicial administrative tribunal that has broad oversight and supervisory powers over public utilities and designated monopolies, as set out in statute. The PUB considers both the impact to customers and financial requirements of the utility in approving rates. Dispute resolution - If disputes about compensation arise and can't be solved with the	The automobile insurance industry is regulated provincially as follows: i.) New Brunswick's Financial and Consumer Services Commission (FCNB) is responsible for the administration and enforcement of provincial legislation that regulates insurance and other sectors. The Insurance Division provides day-to-day administration of the Insurance Act through the regulation,	The automobile insurance industry is regulated provincially as follows: i.) Office of the Superintendent of Insurance - regulates the business of insurance in the province and enforces the Insurance Act. They license all insurers and intermediaries operating in the province. The Superintendent has the authority to take disciplinary actions if the Act is not followed. Also facilitates the interface between	The automobile insurance industry is regulated provincially as follows: Financial Services Commission of Ontario (FSCO). FSCO's legislative mandate is to provide regulatory services that protect the public interest and enhance public confidence in the sectors it regulates. Disputes between consumers and insurers involving statutory accident benefits must go through mediation before the dispute can proceed to	The Saskatchewan Rate Review Panel advises the Government of Saskatchewan on rate applications proposed by the SGI Auto Fund. The Automobile Injury Appeal Commission is an independent tribunal responsible for hearing no fault benefit appeals in Saskatchewan. The Commission has the authority to set aside, confirm or vary benefits decisions made by SGI.

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
			claimant's case manager, the next step is to ask the Internal Review Office to review the decision. This office operates independently of Injury Claims Management. If not satisfied with the outcome of the internal review, claimants can appeal to the Automobile Injury Compensation Appeal Commission which is completely independent from MPI.	oversight and licensing of insurers and insurance intermediaries. Compliance staff work to ensure that insurers and intermediaries are following the provisions in the Act and Regulations. They are an arm's length, self-funded, independent Crown Corporation established by the provincial government on 1 July 2013. They are funded by the regulatory fees and assessments paid by the regulated sectors. ii.) The New Brunswick Insurance Board (NBIB) is a quasi-judicial administrative tribunal established by the Government of New Brunswick in 2004 as the regulatory agency for automobile insurance rates with the overall supervision of automobile insurance rates in New Brunswick. The NBIB is an independent agency that operates at arm's-length from government. They are funded by the regulatory fees and assessments paid by the regulated sectors.	consumers and the insurance industry by working toward a responsive legislative framework for insurance companies and agents and by assisting insurance consumers in dealing with insurance matters. ii.) The Nova Scotia Utility and Review Board (NSUARB) is an independent quasi-judicial body which has both regulatory and adjudicative jurisdiction flowing from the Utility and Review Board Act. It reports to the Legislature through the Department of Finance. The Board holds reviews and hearings on rules and rate filings to ensure they meet the standards set out in the legislation and regulations. The Board ensures compliance with the Insurance Act by administering rules, publishing policy statements and interpretations, ordering investigations and actuarial reports, imposing administrative and monetary sanctions and exercising the regulatory function of a tribunal.	arbitration or court. Dispute resolution responsibility moved from FSCO to Ministry of the Attorney General's Licence Appeal Tribunal.	

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Legislation/ Acts	Insurance Corporation Act Insurance (Vehicle) Act Insurance (Vehicle) Act Regulation	Insurance Act Enhancing Consumer Protection in Auto Insurance Act	The Crown Corporations Public Review and Accountability and Consequential Amendments Act	Insurance Act	Insurance Act	Insurance Act 1990 Compulsory Automobile Insurance Act 1990 Prepaid Hospital and Medical Services Act 1990 Motor Vehicle Accident Claims Act 1990 Automobile Insurance Rate Stabilization Act 2003	The Saskatchewan Government Insurance Act The Automobile Accident Insurance Act The Crown Corporations Act
Interaction with Health System/ Social Security System	Wage loss payments from other disability benefit sources such as work/private insurance plans or employment insurance are deducted from the benefits payable under Basic Autoplan, i.e. ICBC is the second payer. ICBC reimburses the Medical Services Plan of BC (MSP) for services of medical practitioners that are required as a result of an ICBC claim.	The Government of Alberta assesses an annually adjusted amount to industry to cover the cost of health services provided to victims of automobile accidents.	MPI makes payments to Manitoba Health (included within Unallocated Loss Adjustment Expenses) which are calculated based on the Corporation's agreement with Manitoba Health.	The Minister of Health may, in respect of personal injuries arising out of the use or operation of a motor vehicle registered in the Province, impose a levy on each insurer for the purpose of recovering (a) the cost of the entitled services provided to beneficiaries under the Medical Services Payment Act, (b) the cost of the entitled services provided to persons under the Hospital Services Act, and (c) the cost of social services provided to persons under the Family Services Act.	The Office of the Superintendent collects the auto levies on behalf of the Department of Health pursuant to the NS Health Services and Insurance Act. Department of Health annually conducts an actuarial assessment of the auto collision costs for which the Superintendent will provide each automobile insurer of the amount of the levy. In addition, in each year, every automobile insurer shall pay a levy of fifty cents with respect to each vehicle insured by that automobile insurer for the purpose of recovering costs incurred by volunteer fire departments in responding to motor vehicle accidents.	1. The provincial health insurance plan is the first responder in an auto collision. It covers acute care typically performed in hospitals – for example, setting a broken bone. Car insurers reimburse the provincial governments for the medical services they provide to the collision victims up front. 2. A private plan – employee benefit plan, private health care plan or provincial workers compensation plan – responds second. 3. Auto insurers pay the majority of the costs for recovery (other than for acute care). Every year, car insurers pay $2 billion to help collision victims recover -- more than provincial health insurance plans, workers' compensation plans and private	To offset costs incurred by the provincial health care system as a result of bodily injuries sustained while either operating a motor vehicle or as a result of a motor vehicle, the Auto Fund reimburses the Ministry of Health for a portion of the costs, about $30 million per year. Medical funding costs are allocated to vehicle classes based on the amount of actual medical expenses they incur. The total assigned medical funding cost is then divided by the forecasted number of vehicles for the rating period within that class to determine the average medical funding cost per vehicle. Each vehicle within the class will pay the same amount.

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
						health care plans combined.	
Fraud - estimated costs	Fraud detection and enforcement activities expected to reduce basic insurance costs by $21 million for policies written over the next year, and will save up to $44 million a year by 2019.	Not available	MPI's Special Investigation Unit has saved policyholders approximately $60 million over the past five years	Not available	Not available	83% of auto insurance fraud in Ontario takes place in the Greater Toronto Area (FSCO) Estimates of auto insurance fraud range from 9 to 18 per cent of claims costs, which represents between $116 and $236 per average premium paid in Ontario (KPMG, 2010)	Not available
Population (millions)	4.7	4.2	1.3	0.8	0.9	13.8	1.1
Exposure/ Number of registered vehicles (millions)	3.2	2.7	1.1 (includes all vehicle types)	0.5	0.6	7.1	1.2 (includes all vehicle types)

Benefits available

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Overview of benefits	- Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $20,000) - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.	- Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $10,000) - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.	- Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $20,000) - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.	- Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $20,000) - Direct Compensation Property Damage - Medical Payments/ Funeral Expense /Disability Income/Death Benefits - see details below.	- Compulsory minimum Third-Party Liability - limit $500,000 per claim - Direct Compensation Property Damage - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.	-Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $10,000) - Direct Compensation Property Damage - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.	- Compulsory minimum Third-Party Liability - limit $200,000 per claim (if limit is reached for bodily injury and property damage, payment on property damage capped at $10,000) - Medical Payments / Funeral Expense / Disability Income / Death Benefits - see details below.

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Non economic loss benefits	Able to sue for pain and suffering, no limits	If injury is deemed "minor" under provincial legislation, maximum award is $4,956	No pain and suffering benefits	If injury is deemed "minor" under provincial legislation, maximum award is $7,818.87	If injury is deemed "minor" under provincial legislation, maximum award is $8,486	If injury meets severity test (called "threshold") have the right to sue for pain and suffering, subject to deductible. Lawsuit allowed only if injured person dies or sustains permanent and serious disfigurement and/or impairment of important physical, mental or psychological function. The court assesses damages and deducts $37,385.17 ($18,692.59 for a Family Law Act claim)	If no-fault option selected: No pain and suffering benefits If tort option selected: Have the right to sue for pain and suffering, subject to $5,000 deductible.
Economic loss benefits	75% gross weekly wages to maximum $300/week; 104 weeks for temporary disability, lifetime for total disability; nothing is payable for the first seven days of disability; homemaker up to $145/week, maximum 104 weeks Right to sue for economic loss in excess of no-fault benefits	80% of gross weekly wages to maximum $400/week; up to 104 weeks for total disability; nothing is payable for the first seven days of disability; non-earner benefit (unemployed person 18 years or older) $135/week, for up to 26 weeks Right to sue for economic loss in excess of no-fault benefits	90% of net wages based on gross annual income of maximum $94,500/year; nothing is payable for the first seven days of disability	Maximum $250/week; 104 weeks for partial disability, lifetime for total disability; must be disabled for at least seven days to qualify; unpaid housekeeper $100/week, maximum 52 weeks Right to sue for economic loss in excess of no-fault benefits	80% of gross weekly income (less any payments for loss of income); 104 weeks partial disability; lifetime if totally disabled (incapable of performing essential duties); maximum $250/week; must be disabled for at least 7 days to qualify; unpaid housekeeper, if completely disabled, $100/week for maximum of 52 weeks Right to sue for economic loss in excess of no-fault benefits	Income Replacement Benefit: 70% of gross wages to maximum $400/week, minimum $185/week for 104 weeks (longer if victim is unable to pursue any suitable occupation); nothing is payable for the first seven days of disability. Non-earner Benefit (disabled unemployed persons, students enrolled in education full time, or students who completed their education less than one year before the accident and are	If no-fault option selected: 90% of net wages based on gross annual income of maximum $94,587/year; nothing is payable for the first seven days of disability unless catastrophically injured If tort option selected: Up to two years; $429/week for total disability (lifetime if unable to return to any job); $214/week for partially disability ($107/week if worked less than six months prior to collision); maximum $22,308/year

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
						not employed): $185/week for 104 weeks; four-week wait; limit two years; Not available if the insured is eligible for, and elects to receive, the income replacement or caregiver benefit Injured person may sue for 70% of net income loss before trial, 100% of gross after trial; also for medical, rehabilitation and related costs when injury meets severity test for pain and suffering claims Right to sue for economic loss in excess of no-fault benefits	
Medical / Treatment / Care benefits	Up to $150,000/person	Up to $50,000/person	No time or amount limit	Up to $50,000/person; four-year time limit	Up to $50,000/person; four-year time limit	Up to $3,500/person for minor injury; up to $65,000/person for combined medical and attendant care for non-minor and non-catastrophic injury for up to 5 years (longer for children; paid only as long as person remains medically eligible); up to $1 million for combined medical and attendant care for catastrophic injury	If no-fault option selected: Up to $6,813,680/person; If tort option selected: Up to $26,667/person for non-catastrophic injury, up to $200,000 for catastrophic injury
Death / Funeral benefits	Funeral expense: $2,500 Death following a collision; death	Funeral Expense $5,020 Death of head of household	Funeral Expense ($8,409 maximum) Death any time	Funeral Expense $2,500 Death of head of household	Funeral Expense $2,500 Death of head of household	Funeral Expense $6,000 (Cap) Death of	If no-fault option selected: Funeral Expense $10,219

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
	of head of household $5,000, plus $145/week for 104 weeks to first survivor, plus $1,000 and $35/week for 104 weeks to each child; death of spouse/partner of head of household $2,500; death of dependent child, according to age, maximum $1,500	$10,000, plus 20% ($2,000) for each dependent survivor after first, plus additional $15,000 for first survivor and $4,000 for each remaining survivor; death of spouse/adult interdependent partner of head of household $10,000; death of dependent relative, according to age, maximum $3,000; grief counselling up to $400 per family with respect to death of any one person	after injury; benefits for partners depend on wage and age of deceased and range from $61,706 to $472,500; benefits for dependent children depend on their age and range from $29,309 to $53,993; disabled dependants receive an additional $26,995; non-dependent children or parents receive $13,741	$50,000, plus $1,000 to each dependent survivor after first; death of spouse/partner of head of household $25,000; death of dependant $5,000	$25,000, plus $1,000 to each dependent survivor after first; death of spouse/partner $25,000; death of dependant $5,000	Spouse/Partner $25,000 (Cap) Death of Dependant $10,000 (Cap) Death of Other $10,000 (Cap; Benefits to each parent/guardian) If optional indexation coverage is purchased, these amounts may be higher. Time limit: Death within 180 days of accident (or three years if continuously disabled prior to death).	50% of deceased's income benefit; minimum $70,293 to spouse; 5% of calculated death benefits to each dependent child; if no spouse, $15,620 to each surviving parent or child (21 years or older), to maximum $70,293; death of dependent child $31,240 If tort option selected: Funeral Expense $6,667 45% of deceased's net income; minimum $60,000 to spouse; 5% of calculated death benefits to each dependent child; if no spouse or dependant, estate receives up to $13,333
Other benefits	Not applicable	Not applicable	Impairment benefits: Minimum $770/week, maximum total of $154,261 for non-catastrophic injury; a maximum $243,580 for catastrophic injury	Not applicable	Not applicable	Not applicable	Impairment Benefits If no-fault option selected: Up to $195,257/person for non-catastrophic injury, up to $238,479 for catastrophic injury If tort option selected: Up to $13,333/person for non-catastrophic injury, up to $173,333 for catastrophic injury

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History of reform

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Overview of recent reform activity	No recent reform activity	Bill 53 - The Insurance Amendment Act (2004) Bill 39 - Enhancing Consumer Protection in Auto Insurance Act (2014)	No recent reform activity	Bill 54 (Minor Injury Regulation) Regulation 2013-37 amending Regulation 2003-20 (Injury Regulation) under the Insurance Act	Bill 1 - Automobile Insurance Reform Act (2003) O.I.C. 2010 - 254 Fair Auto Insurance Reforms (FAIR) Phase I and II (2012 & 2013)	Bill 5 - The Automobile Rate Stabilization Act (2004) Ontario Auto Reform Reg. 34/10 (2010) Minor Injury Guideline and Treatment Assessment Plan OCF-18 (2014) Bill 15 - Fighting Fraud and Reducing Automobile Insurance Rates Act (2014) Bill 91 - Building Ontario Up Act (2015)	2003 Reform (Choice)
Drivers of reform	Not applicable	Rapidly rising premiums Pain and suffering cited as the biggest automobile claims cost factor in Alberta at the time of reform	Not applicable	Concerns about fairness between minor/non-minor injuries Cost and availability issues: - average premiums increased significantly (38%) over 2001 to 2003 - significant costs going towards minor injury claims, particularly pain and suffering, 2002 closed claims study showed 61% of claims were for pain and suffering	Concerns about fairness between minor/non-minor injuries Rapidly rising premium rates Pain and suffering costs significant - 2002 closed claims study found that for claims $20,000 or less, approx. 80% of total settlement amounts were for pain and suffering Lack of choice in coverage Inefficiency in parts of claims process	Escalating claim costs and premiums Lack of coverage options for consumers Increase in fraudulent claims	To meet the needs of those people in the province who want an alternative to no-fault insurance
Key objectives / intents	Not applicable	2004 reforms' goal was to achieve lower insurance premiums for drivers with good records and promised rate savings of 20% overall 2014 reforms allowed for stronger oversight	Not applicable	The government's stated goal was "to make sure the system in place for helping those people injured in motor vehicle accidents is fair, accessible and affordable for all New Brunswickers."	2003: Achieve a 20% reduction in rates 2010: With respect to the minor injury definition and cap, review the fairness of compensation while ensuring that premiums remain affordable.	Reduce claims costs and premiums Reduce waiting time	Allow drivers to choose no-fault or tort product

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
		of automobile insurance premiums by providing the Automobile Insurance Rate Board the responsibility to regulate both basic and additional premiums			2013: Increase choice in coverage. Increase claims process efficiency, reduce waiting times for treatment/reimbursement approval. Promote health and well-being of automobile accident victims.		
Key changes made to legislation or guidelines through reform process	Not applicable	2004: Introduction of a cap on non-economic losses of $4,000 to be adjusted annually by CPI Increased Medical/Rehab benefits from $10,000 to $50,000 Establishing protocols for diagnosing and treating minor injuries Grid System for calculating rates for basic coverage introduced 2014 File and approve system for premium adjustments introduced instead of the previous system involving an annual industry-wide rate adjustment	Not applicable	2003: -Cap on damages for non-pecuniary loss for non-permanent injuries of $2,500 - Creation of Review Panel mandated to review and approve any future rate increases and to monitor insurance issues - Requirement that insurers file their rates at least once every 12 months - Regulation of underwriting practices to prevent discrimination 2013: - Non-pecuniary losses cap increased to $7,500, indexed to CPI - Definition of minor injury amended	2003: Cap awards for pain and suffering for minor injuries to $2,500 Increase minimum liability limit from $200k to $500k All future rate increases have to be reviewed and approved by newly created review board 2010: Amend minor injury definition to mirror Alberta definition Pain and suffering cap increased to $7,500, indexed to inflation FAIR Product Reforms (implemented in two phases): Phase I included provisions for: enhanced accident benefits (including medical, rehabilitation, funeral, death and loss of income benefits), prohibiting premium increases if no claim is made, assistance for volunteer Fire Departments, and periodic review of Auto Insurance	2014 Ontario Bill 15: Establishing a more efficient and effective dispute-resolution system; Continuing the right of claimants and insurers to appeal decisions to the courts; Continuing the right of claimants to pursue tort claims in court; Reducing the applicable interest rate applied to overdue payments in the Statutory Accident Benefits Schedule (SABS) to reflect current interest rates; Reducing the prejudgment interest that can be awarded for non-economic losses to reflect current interest rates; and Reducing fraud and abuse in the towing and vehicle storage industries. 2015 Ontario Bill 91: Adjustments to the tort deductible and the monetary threshold beyond which the tort deductible does not apply to reflect inflation;	All drivers given the option of opting out of no-fault system and choosing tort coverage which would allow the right sue for pain and suffering, subject to a $5,000 deductible. No fault insurance also improved as recommended by independent committee that reviewed the coverage

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
					Law. FAIR Phase II included provisions for: diagnostic and treatment protocols for minor injuries, introduction of DCPD, and limited liability and new priority of pay rules for rental companies.	Introduction of a winter tire discount; Updating the Catastrophic Impairment Definition; Changes to standard benefit levels under the Statutory Accident Benefits Schedule (SABS); Restrictions on premium increases and lowering of the maximum interest rate charged on monthly automobile premiums (effective June 1, 2016).	
Observed impacts following reform	Not applicable	Reduction in bodily injury loss costs post reform Average premiums for Bodily Injury and Accident Benefits decreased following reform	Not applicable	Reduction in Bodily Injury loss costs and average premiums Availability of insurance improved Reduction in claims costs from the caps helped pay for the introduction of the First Chance subsidy which reduced rates for inexperience drivers maintaining clean driving records	Improved availability and affordability	2010 reforms had the most demonstrably positive impact reducing costs associated with minor injuries and restoring availabity and affordability of insurance.	Majority of drivers in the province remained under the no-fault system - the percentage of drivers electing tort had not surpassed 0.74% in any year from 2003 - 2013.

Premiums

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Premium policy	Basic rates are regulated by the British Columbia Utilities Commission (BCUC), an independent regulator. The BCUC approves	The primary role of the Automobile Insurance Rate Board is to regulate automobile insurance rating programs for private passenger	The Public Utilities Board (PUB) acts as a rate setting tribunal for various public utilities. The PUB establishes just and reasonable rates for	Rate filing submission should include a detailed actuarial justification for rate level indications for all applicable coverage types.	Subject to the requirements to file at least once every two years for private passenger vehicles and once every three years for commercial	The insurer must provide detailed support for any rate level change. Actuarial support should contain the data and narrative description of all ratemaking steps	The Auto Fund's philosophy is that all drivers are treated equally unless their driving record shows they are a greater risk for causing a

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
	Basic insurance rates and ensures Basic product is adequate, efficient and reasonable. ICBC is committed to providing customers with the best insurance coverage at the lowest possible cost.	vehicles for both basic and additional coverage in Alberta. The Board's vision is to foster an efficient and effective automobile insurance market with fair and predictable rates. The Grid Rating Program was developed to set maximum premiums that insurance companies can charge for basic coverage for any driver profile. Many drivers with limited experience are capped by the Grid. Insurance companies must compare a driver's premium under their current rating program to a driver's premium on the Grid and charge the lesser of the two premiums. The Board reviews the base premiums for the Grid Rating Program for basic coverage on an annual basis factoring in loss experience specific to the Grid, loss experience for all private passenger vehicles, ratemaking components and any other matters the Board considers appropriate.	compulsory driver and Basic vehicle insurance provided by Manitoba Public Insurance (MPI). When considering a rate application, the Board reviews the financial requirements of the utility as well as the impact on the consumer. While the Board is sensitive to customer reaction to increases, it must consider the sustainability of the utility.	Actuarial support should contain the data and narrative description of all ratemaking steps for each coverage type. In general, documentation should be in sufficient detail to enable the Board to trace the resulting rates from the raw data experience and other supporting data. The NBIB does not require insurers to adopt a specific ratemaking methodology. However, rate indications should be developed in accordance with generally accepted actuarial principles including the appropriate utilization of professional judgment in the ratemaking process. Insurers wishing to deviate from the justified rate level indications developed will need to furnish the Board with a descriptive narrative explaining the rationale behind the proposed deviations. The Board will only consider such factors, apart from actuarial methodology, as are presented to them by the insurer. These factors might include, but are not limited to, competition,	and miscellaneous vehicles, a Company can file an application with the Board proposing changes to its rates and/or risk-classification system. Applications (approval typically 15-60 days, but extendible to 120 days) are made under one of three sections of the Insurance Act, namely: Section 155B – Overall Rate Decreases; Section 155H – Expedited Approval; and Section 155G – All others (Prior Approval / Adopt IAO Rates / CLEAR Table update / Commercial Rate Group Table update / GISA Class changes / Endorsements / Discounts & Surcharges). The Company must provide detailed support for any rate level change. Actuarial support must contain the data and narrative description of all ratemaking steps for each of the specific rate changes proposed. While the Board's consulting actuary provides selected trends based on industry data, companies are allowed to justify	for each of the specific rate changes being proposed. Each subsection, outlined in the guidelines, must contain the necessary documentation for all of the individual coverages. In general, documentation must be in sufficient detail to enable the reviewer to trace the resulting rates from the raw data experience and other supporting data. FSCO does not require insurers to use a specific ratemaking methodology. However, insurers are required to provide adequate actuarial documentation and support for the rate levels subject to prior approval. Technical notes includes analyses of the reform impact & loss trends.	collision. The Saskatchewan Rate Review Panel (SRRP) advises the Government of Saskatchewan on rate applications proposed by the SGI Auto Fund. The Panel reviews each application and provides a public report stating its opinion about the fairness and reasonableness of the rate change, while balancing the interests of the customer, the Crown corporation and the public. The Auto Fund does not receive money from, nor pay dividends to, the Province of Saskatchewan, SGI or Crown Investments Corporation of Saskatchewan (CIC), SGI's parent corporation. The Auto Fund is operated on a self-sustaining basis viewed over a long-term time frame. Any annual financial excess or deficiencies of the Auto Fund are recorded in its Rate Stabilization Reserve (RSR). The RSR is held on behalf of Saskatchewan's motoring public and cannot be used for any other purpose by the government or the administrator.

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
				market share, business plans, etc. The rationale provided should be as detailed as possible in order to illustrate for the Board that the rate selections are reasonable deviations from rate indications. NBIB proscribes Health Services Levy and Tax Rates to be used in rate filings.	their own trend selections.		
Regulations and limits	Changes to ICBC's basic insurance are regulated by the BC Utilities Commission. They ensure that basic insurance rates are justified and reasonable.	Alberta Regulation 117/2014 - Automobile Insurance Premiums Regulation No insurer may charge or collect a premium for basic coverage or additional coverage unless the insurer's rating program with respect to that coverage has been approved in accordance with this regulation. Automobile Insurance Rating Program Approvals Every insurer licensed to undertake automobile insurance in Alberta must file its rating program with the Board and obtain the prior approval of the Board to either establish a new rating program to enter the market or revise an existing rating program. The Board may	The Crown Corporations Public Review and Accountability and Consequential Amendments Act directs that no change in rates shall be made and no new rates for services shall be introduced without approval from the PUB.	Approval Process: The filing will be reviewed for completeness based on the filing guidelines and the Insurer will be informed of any information required to complete this filing. Once a filing is deemed complete, the NBIB and/or its consulting actuaries will proceed to review the technical components of the filing. The NBIB may request further information from the insurer. Although all rate filings are subject to review and are ultimately approved by the Board, appearing before that Board at a hearing is only required in specific circumstances. The Insurance Act specifies that if an insurer is seeking an increase of more than 3% over currently	Where Board staff or its consulting actuaries produce a report, the report is shared with the Company. The Company has ten days to respond with any comments. The author of the report will then have four days to respond to the comments. The Company would then have a further four days to respond to those final comments. At this stage, the application and the reports and comments are forwarded to a selected panel. In most cases, the hearing of the application will be a paper hearing in front of up to three members of the Board. Where deemed appropriate, a public hearing may be held. In these cases, an Order and Notice of the Public	Proposed changes to rates and risk classifications for Private Passenger Automobile (PPA) insurance are subject to: the simplified filing guidelines where the filing changes satisfy the criteria established by the Superintendent; the CLEAR simplified filing guidelines for filing changes to vehicle rate groups; or the major filing requirements (refer to the PPA Filing Guidelines - Major). Additional filing guidelines applicable to Underwriting Rules, Endorsements, Insurance Forms, and Manuals.	The Auto Fund is required to submit vehicle insurance rate changes to the SRRP. The SRRP's mandate is to evaluate the rate change and to provide an opinion on the fairness and reasonableness of the requested change. The SRRP does not have authority to implement any of its recommendations; the final decision to approve, change or reject rate changes is at the discretion of the provincial government.

Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
		require a Full Filing where there has been no request for a revision to a rating program within the past three years, or at the Board's discretion.		approved rates then it must appear before the Board. Even if a rate filing is not in excess of the 3% threshold, the Board can still require an insurer to appear before the Board in order to better investigate the proposed rates. The hearing process used by the Board is designed to allow interested parties an opportunity to review the rate applications subject to a hearing, to ask questions of the company making the rate filing and to make representations to the Board with respect to the rate filing. Once all of the evidence has been received by the Board from the various parties, the Board will deliberate and render a decision on each rate application that has been subject to a hearing. Decisions of the Board are posted on NBIB's website.	Hearing will be advertised in the Province's newspapers. Interveners will have the opportunity to identify themselves during the time prior to the hearing. The Public Hearing will be in front of three members of the Board. With the exception of a filing of "a schedule of overall decrease in rates with a cap" as identified in the Rate Decrease Filing Regulations, the Board will issue an Order with reasons outlining the decision made by the Board on the application. At this point, the Company has fifteen days to file an appeal of the decision.		
Rating variables	The main factors ICBC considers in determining a driver's Basic Autoplan premiums are: - How the vehicle is used (e.g. commuting, pleasure, business, delivery) - Where the	The base premium for a relevant driver and occasional driver is calculated in accordance with a table published by the Board no later than October 31 each year by determining (a) the territory in	How much drivers pay for Autopac coverage depends on: - where they live (province split into 4 territories) - how the vehicle is used (i.e. commuting, pleasure, etc.) - the vehicle	Type of Vehicle Vehicle Use/Distance driven Territory Driving Record Years Licensed Limit/Deductible Vehicle Rate Group	Type of Vehicle Vehicle Use/Distance driven Territory Driving Record Years Licensed Limit/Deductible Vehicle Rate Group	Type of Vehicle Vehicle Use/Distance driven Territory Driving Record Age Gender Limit/Deductible Vehicle Rate Group	The Auto Fund's philosophy is that all drivers are treated equally unless their driving record shows they are a greater risk for causing a collision. It does not use a driver's age, gender or

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Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
	insured lives or uses the vehicle - Insureds' insurance and claims history	which the policyholder resides and (b) the choice of the policyholder's liability limit. In adjusting base premiums, the Board must ensure that the base premium for the rest of Alberta territory is 20% less than for the Edmonton and Calgary territories. Years of driving experience, number of at-fault claims, and driving convictions are then considered to get from the base premium to the grid premium. Rating Variables: - Age - Gender - Territory - Type of Vehicle - Use of Vehicle - Years Licensed 'The Superintendent may prohibit the use of any rating variable in an insurer's rating program	(year, make and model) - driving record			Factors prohibited from use in risk classification system: - Past claims arising out of accidents occurring on or after September 1, 2010, for which an insured person was 25% or less at fault; - Existence or non-existence of a medical, surgical, dental, hospitalization or other similar plans; - Existence or non-existence of an income continuation plan, sick leave or other similar plans; - Certain lapses in automobile insurance coverage; and - Income, employment history, occupation, credit card history, credit rating, bankruptcy, residence history, net worth, minor accidents after June 1, 2016, etc.	where they live to determine a vehicle insurance premium or the fee for a driver's licence.

	Metrics by Jurisdiction	British Columbia	Alberta	Manitoba	New Brunswick	Nova Scotia	Ontario	Saskatchewan
Premium	Average premium[1]	$912	$623	$963 (All Coverages and Vehicles)	$465	$451	$1,156	$762 (All Coverages and Vehicles)
	Average weekly earnings (2015)	$910	$1,146	$880	$855	$835	$963	$981
	Affordability	100%	54%	109%	54%	54%	120%	78%
	Efficiency - amount of premium returned to policyholders as benefits	58%	Not available	104%	Not available	Not available	Not available	83%
Claim Frequency	Casualty rate per 1,000 vehicles (2014)	6.63	7.16	10.44	5.52	6.88	6.77	4.87
	Casualty rate per 10,000 population (2014)	45.55	45.49	89.52	35.38	41.24	34.74	51.64
	Claim rate per 1,000 vehicles	13.87	5.73	N/A	3.17	4.19	1.74 (BI Threshold claims)	N/A
	Claim rate per 10,000 population	95.21	36.40	N/A	20.29	25.15	8.91 (BI Threshold claims)	N/A
Claim Severity	Average casualty claim size	$45,169	$64,842	N/A	$60,414	$49,196	$153,831 (BI Threshold claims)	N/A
Expenses	Expense rate	Expense categories as a percentage of Basic premium: Claims Services Costs (ULAE) 6.3% Road Safety & Loss Management Costs 1.6% Insurance Operating Costs 4.1% Premium Tax & Commissions 5.0% Non-insurance operating costs 4.4% Total 21.4%	Insurance premium tax 4% Other expense rates vary by insurer, not available at provincial level	Operating Expenses 11.4% Commissions 7.2% Premium Tax 3.0% Regulatory/Appeal 0.3% Total 22.0%	Insurance premium tax 3% Other expense rates vary by insurer, not available at provincial level	Insurance premium tax 4% Other expense rates vary by insurer, not available at provincial level	Insurance premium tax 3.5% Other expense rates vary by insurer, not available at provincial level	Insurance premium tax 4% ULAE 3% General Expenses 11% Commissions 20%

Notes

[1] Average premium is for Basic coverage with the following exceptions: Manitoba and Saskatchewan figures are for all coverages and all vehicles.

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Appendix 2: Investment management review

As part of our review we compared ICBC against Canadian and American insurers across a number of elements such as capital, asset allocation, investment performance etc. In order to complete these elements we relied on Canadian financial statement data from MSA Research Inc. (MSA) and American financial statement data contained in regulatory financial statements as reported to the National Association of Insurance Commissioners (NAIC).

Section 1: Canadian P&C Insurance Benchmarks

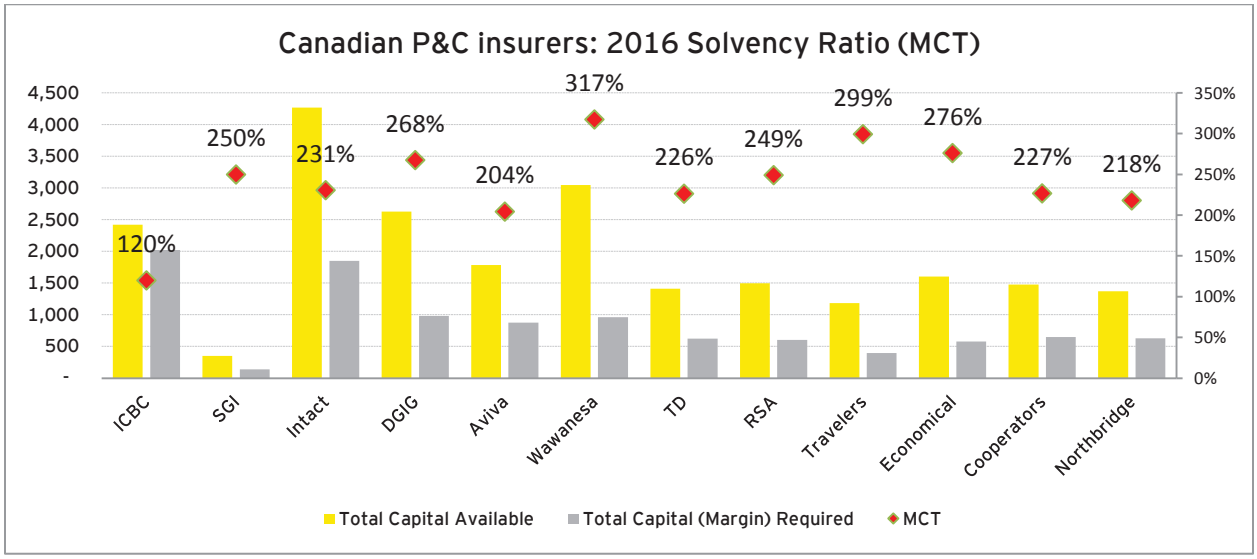
Purpose: Benchmark ICBC to similar organisations i.e. SGI, top 10 Canadian P&C companies, and average Canadian P&C industry.

2016 Solvency Ratio (MCT)

The MCT ratio is an indicator of the solvency strength based on the OSFI regulatory framework. The regulatory minimum requirement is an MCT ratio of 150%. Large diversified insurers typically operate with an MCT ratio of approximately 200%.

ICBC is not subject to the regulatory minimum but has an internal target of 145% for basic and 250% for Optional[33] (the combined target is approximately 177%).

Chart 1: Comparison of MCT Ratio of selected Canadian Insurers



Key Findings

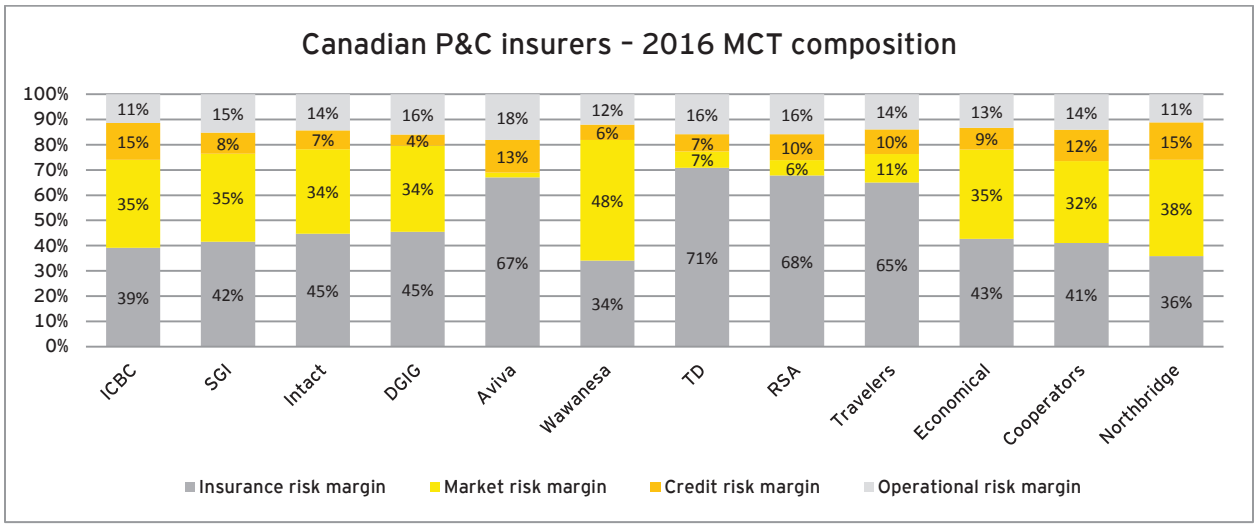
[33] ICBC's MCT ratio in these charts is on a total basis (Basic + optional)

- ICBC 2016 MCT ratio is below the average of comparable insurers and below its target. Improving the MCT ratio could be achieved either by injecting capital or reducing risk (or a mix of both)

MCT composition

The total of market and credit risk margin is approximately 30% for the total Canadian P&C industry, approximately 37% for the total top 10 companies, and ranges from 14% for TD insurance to 54% for Wawanesa among the top 10.

Chart 2: Comparison of MCT composition among selected Canadian Insurers



Key Findings

- ICBC market and credit risk margin is 50% of the total required capital. Only Wawanesa (54%) and Northbridge (53%) have higher contributions of investment risks to the total risk margin. This is a significant level of market and credit risk for ICBC given their capital position as measured by MCT

Investment MCT composition

When reviewing the capital components of the investment portfolio it is clear that certain insurers have little tolerance for equity risk and that very few are investing in real estate in a material way.

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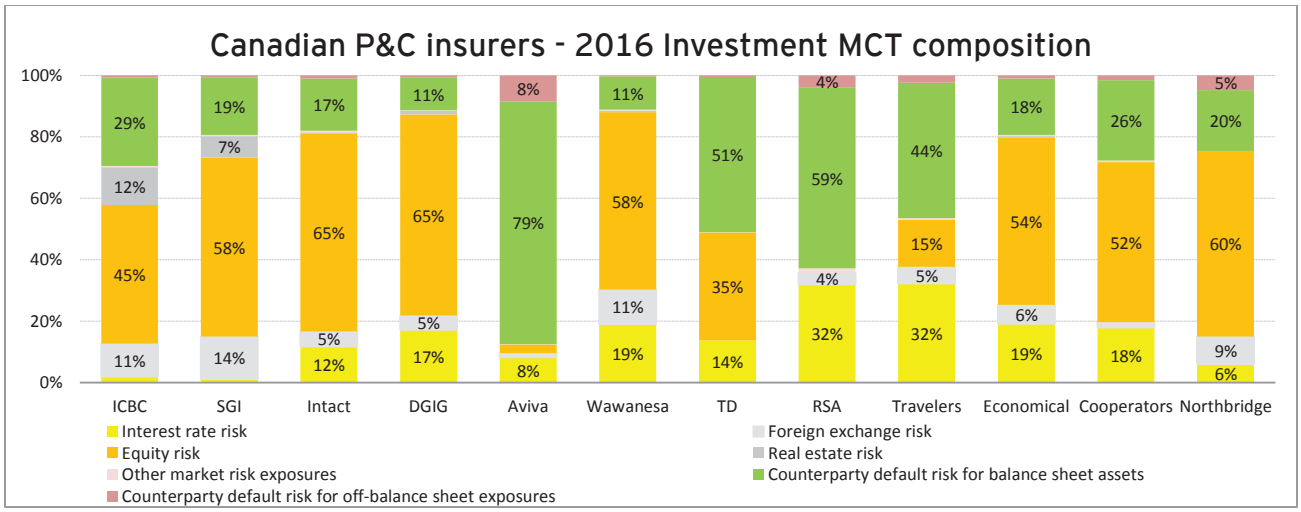
Chart 3: Comparison of Investment MCT composition among selected Canadian Insurers



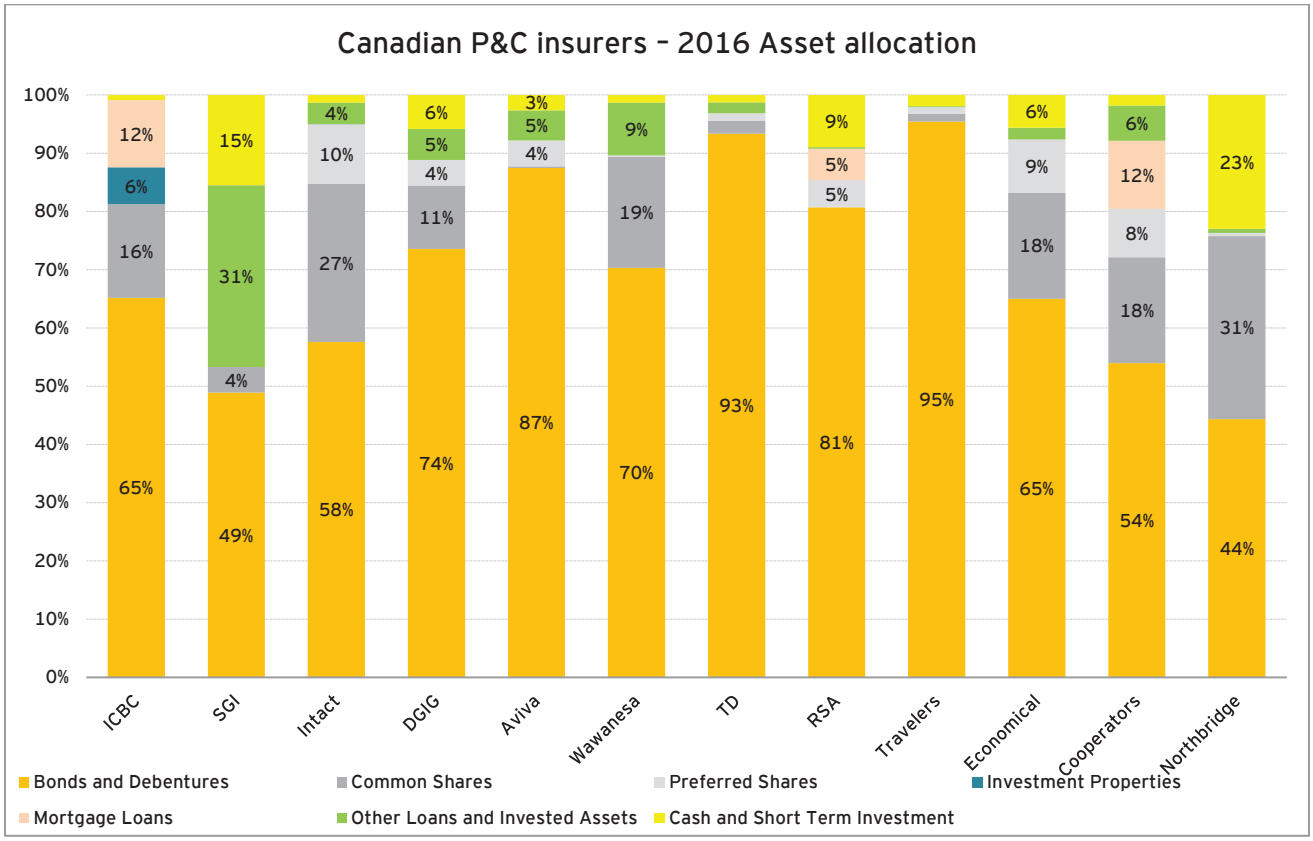
Key Findings

- ICBC has the highest Real estate risk margin ($199m) and Default risk margin ($470m) in dollar value compared to the top 10 Canadian P&C companies

Asset Allocation

Per review of the chart below, ICBC's exposure to Equity risk is comparable to the average exposure of the top 10 Canadian P&C companies (16% vs. 13%). Aviva, TD, RSA, Travelers and SGI have almost no common shares, while Northbridge have 31% and Intact 27%.

Chart 4: Comparison of High Level Allocation among selected Canadian Insurers



Key Findings

- ICBC has no exposure to preferred shares, while Intact, Economical and Cooperators have the highest exposure to preferred shares (10%, 9% and 8% respectively)
- ICBC and Cooperators have the highest exposure to mortgage loans (12%)

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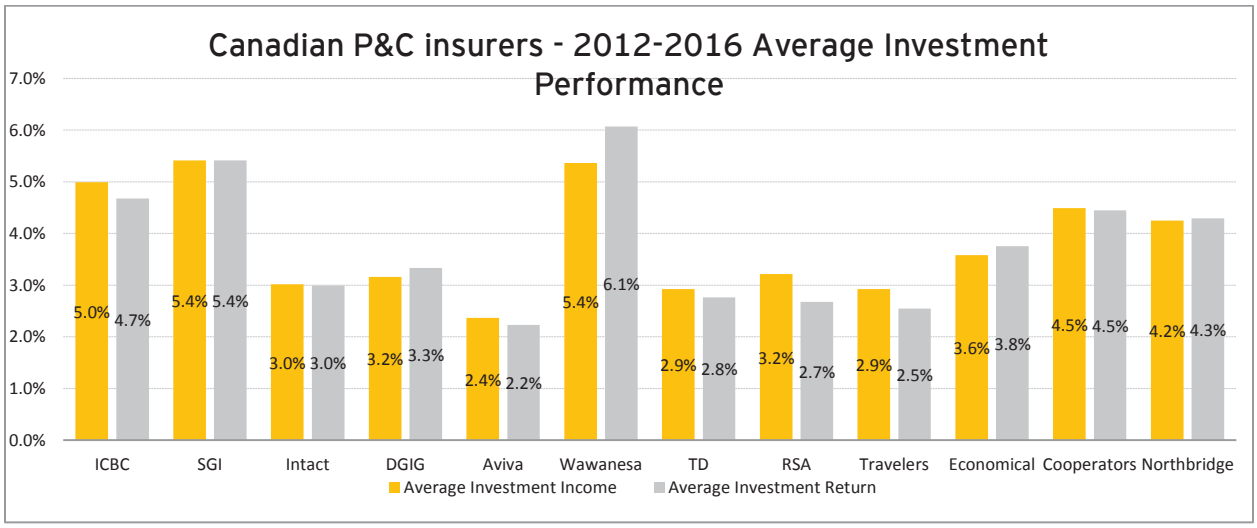
Investment Performance

Over a period of five years there is very little difference between investment income and investment return and those with higher returns are generally aligned with their higher risk asset mix.

Chart 5: Comparison of average Investment performance among selected Canadian insurers



**Investment income is the ratio of the P&L investment income over average invested assets*
***Investment return is the ratio of the P&L investment income plus the change in Accumulated Other Comprehensive Income (Loss) over average invested assets*

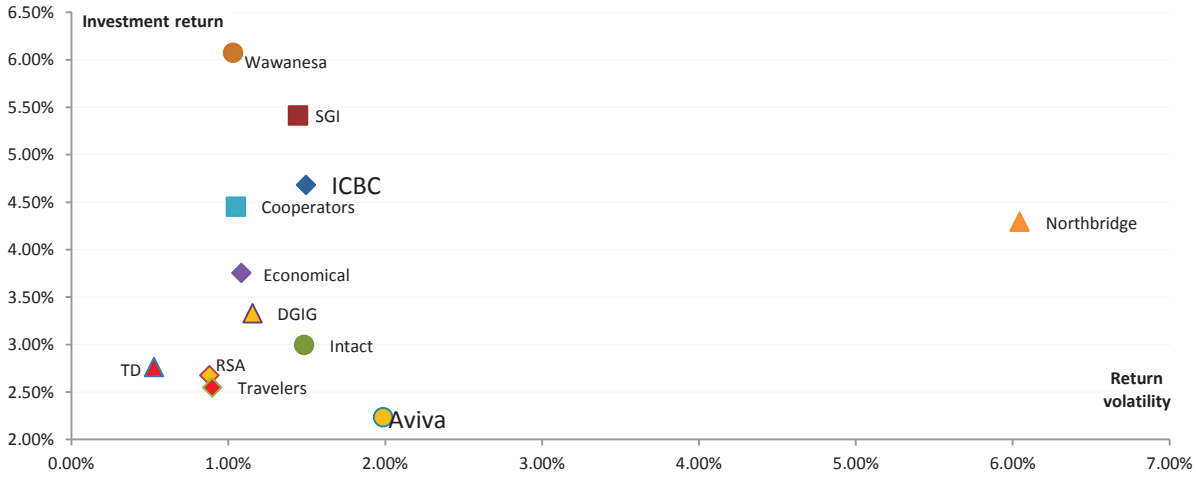
Key Findings

- ICBC is ranked 3rd. after SGI and Wawanesa. ICBC average investment income of 5.00% is higher than the average top 10 (3.41%) and the average of Canadian P&C industry (2.94%)
- A five-year average investment performance shows no material difference between investment income and investment return. On an annual basis, differences are much more significant.

Investment Performance vs Volatility

Reviewing investment performance against volatility of returns gives a measure of who has performed well relative to the level of risk inherent in the portfolio.

Chart 6: Comparison of average Investment performance among selected Canadian insurers



The Sharpe ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk. Sharpe ratio = (average return – risk free rate)/ standard deviation of return.
The risk-free rate is the average over the 2012-2016 period of the 1 year yield to maturity on federal government zero coupon bonds.

Key Findings

- ICBC is ranked 6th on Sharpe ratio (3rd. on absolute investment return) , while Wawanesa is ranked 1st (1st on absolute investment return)
- TD, Economical, and Cooperators have less absolute investment return compared to ICBC, but they have better Sharpe ratios.

Return on Equity

Reviewing the investment return on equity highlights the importance of investment income on overall financial performance.

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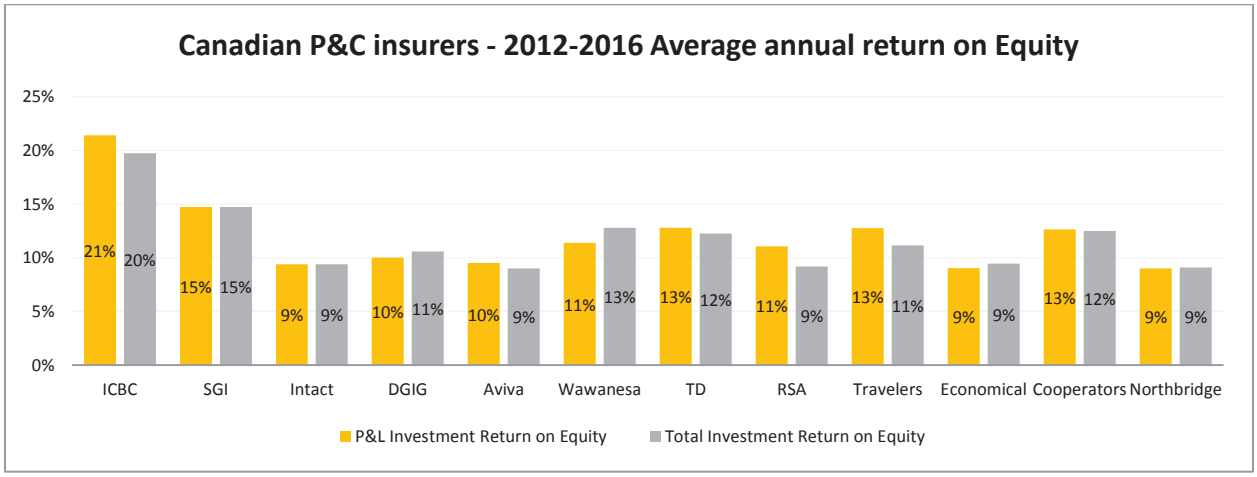
Chart 7: Comparison of average investment return on equity 2012-2016



Key Findings

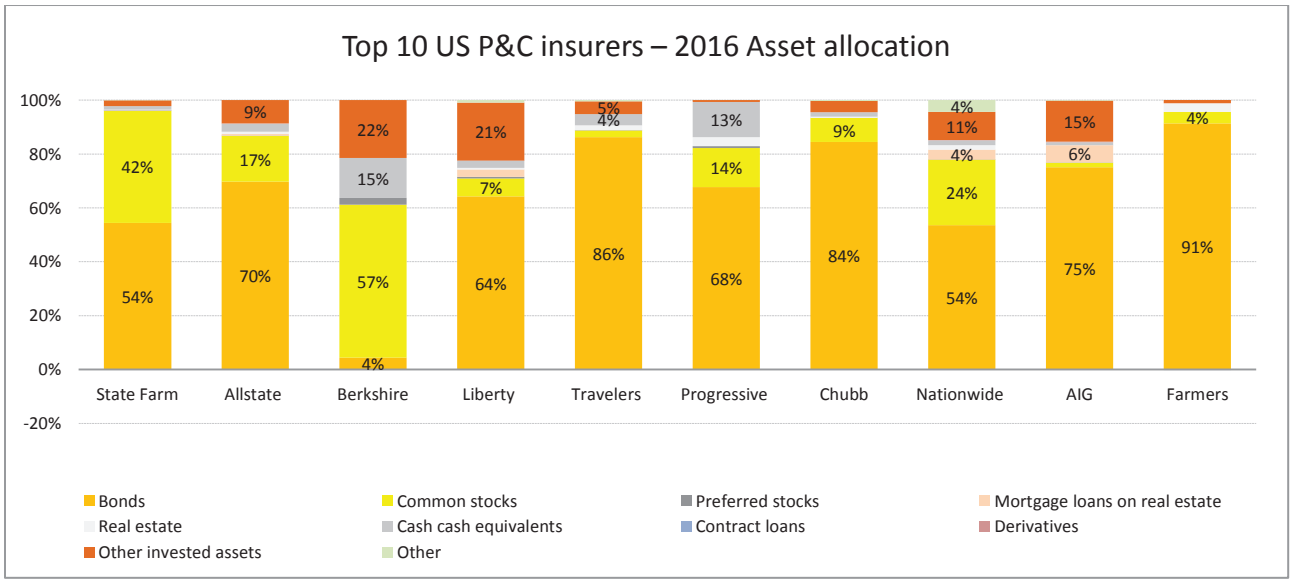
- ICBC has the best ROE compared to SGI and the top 10 Canadian P&C insurers. This measure is impacted by ICBC's lower capitalisation (2016 MCT is 120%).

Section 2: US P&C Insurance Benchmark

Purpose: Benchmark ICBC investment performance to top 10 US P&C companies and average US P&C industry.

Asset Allocation

Chart 8: Comparison of asset allocation of Top 10 US P&C Insurers



Key Findings

- Berkshire has only 4% of its assets in Bonds in comparison to the remaining insurers whose bonds portfolio comprise 54-91% of their asset base.

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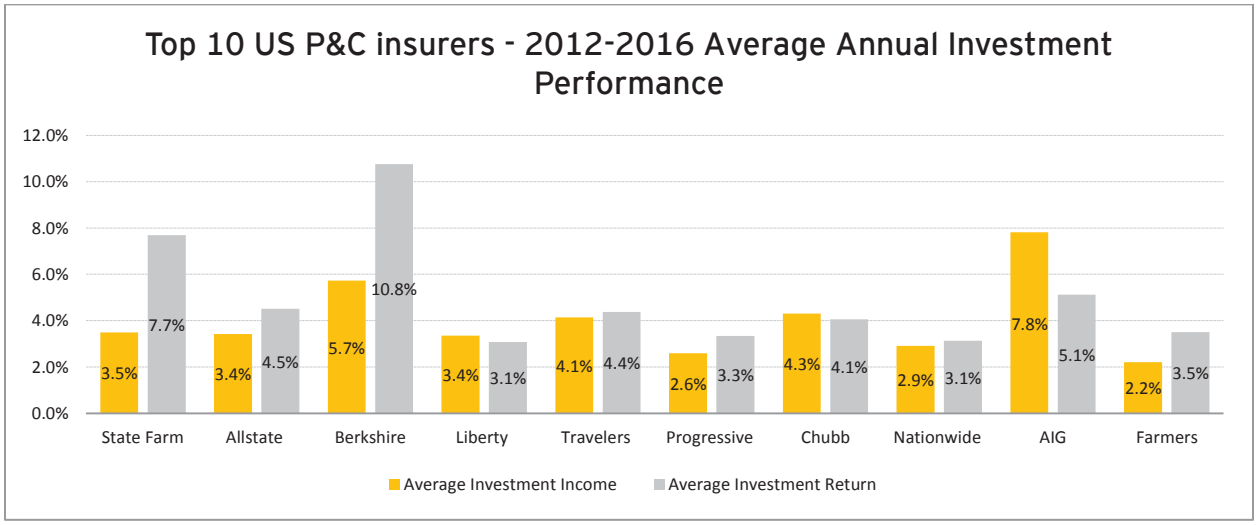
US Average annual investment performance

Chart 9: Comparison of average annual investment performance



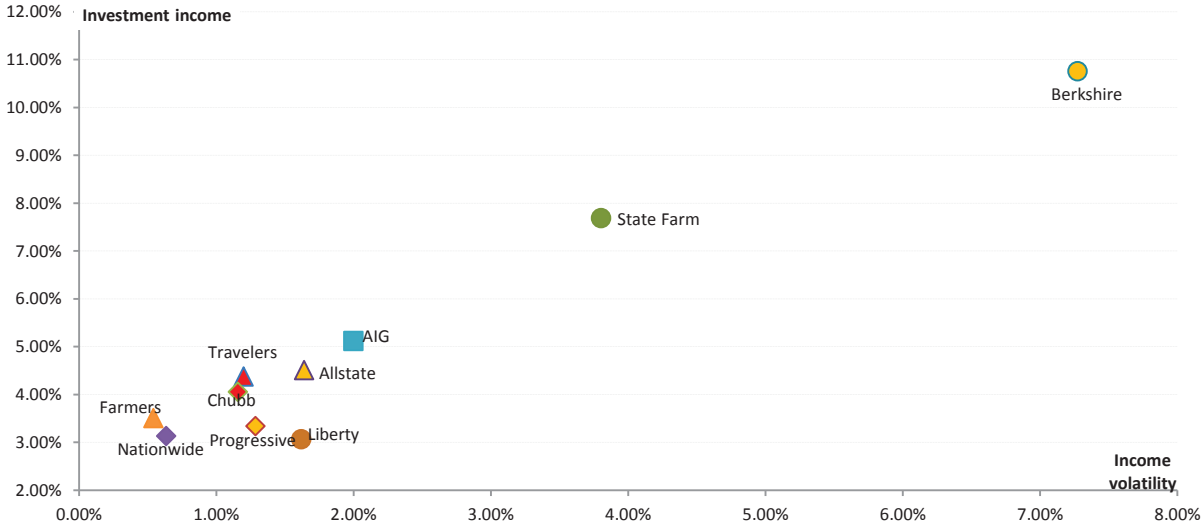
**Investment income is the ratio of the P&L investment income over average invested assets*
***Investment return is the ratio of the P&L investment income plus the change in unrealized capital gain over average invested assets*

Key Findings

- Average investment returns range from 3.1% for Liberty to 10.8% for Berkshire
- The difference between average investment return and average investment income is material for Berkshire and State Farm, as both invest heavily in common stocks, and unrealized capital gains do not flow to the P&L under current US statutory rules\

Investment Performance vs Volatility

Chart 10: Comparison of average Investment performance among Top 10 US insurers



**The Sharpe ratio is the average return earned in excess of the risk-free rate per unit of volatility or total risk. Sharpe ratio = (average return – risk free rate)/ standard deviation of return.*
The risk-free rate is the average over the 2012-2016 period of the 1 year yield to maturity on federal government zero coupon bonds.

Key Findings

- Berkshire is ranked first on average annual investment return but has the worst Sharpe ratio among the top 10 US P&C insurers

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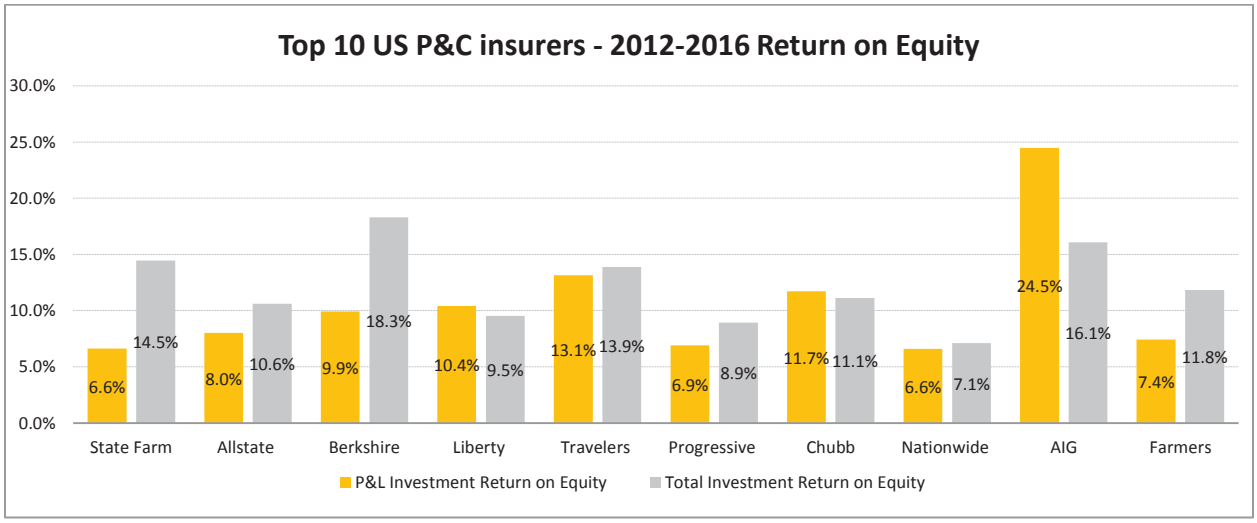
Return on Equity

Chart 11: Comparison of average investment return on equity 2012-2016



Key Findings

- AIG has materially higher P&L investment ROE than the industry average and top 10 US P&C insurers
- Berkshire has the highest total investment ROE compared to average US P&C industry and top 10 US P&C insurers

Benchmark Conclusions

ICBC

- Over the previous 5 years (2012-2016) ICBC generated approximately $3.4 CAD billion from investment income, but lost approximately $2.2 CAD billion through its underwriting activities
- ICBC outperformed the total P&C industry and ranked 3rd (just behind Wawanesa and SGI) on P&L investment income and total investment return over the 2012-2016 period
- ICBC's 2016 MCT ratio is 120%, lower than its internal target of 177% (weighted 145% for Basic and 250% for Optional)
- ICBC's 2016 total capital required is approximately $2 CAD billion. Around 50% of the required capital is related to investment risks (market and credit risks)
- De-risking the investment portfolio (investing only on assets with no capital charge) would reduce the required capital to $1.1 CAD billion (after eliminating diversification benefits) and thus increase the MCT ratio to 204%
- However, de-risking the investment portfolio would also reduce the average investment return over the previous 5 years from 4.7% to something around 2.2% (based on Aviva's historical average return, given Aviva portfolio capital charge is almost nil). In this case, ICBC would generate only $1.6 CAD billion instead of $3.4 CAD billion (reduction of $1.8 CAD billion)
    - De-risking the investment portfolio will also decrease the expected investment return and thus increase insurance rates (as the investment discount becomes smaller)

Canadian P&C industry

- The risk profile of each insurer has a direct impact on its investment risk appetite and consequently on its asset allocation
- Insurance entities owned by large groups, such as Aviva, RSA, TD and Travelers, have little or no appetite for market risk (based on their MCT required capital)
- Both ICBC and Wawanesa have a very comparable asset allocation to equities (16% vs. 19%) and non-investment grade bonds (21% vs. 23%). Moreover, ICBC allocates higher percentage to mortgage loans (12%) compared to the P&C industry, while Wawanesa allocates more to "other loans and invested assets" (9%)

US P&C industry

- The average annual investment return over the historical period 2012-2016 is 5.15% for the US industry, compared to 2.81% in Canada. The US P&C better performance is due in part to the much higher stock market performance in US compared to Canada over the past five years
- The US P&C industry investment in common shares in 2016 is 30%, materially higher than the 6% observed in Canada
- The P&L volatility in US is materially lower than in Canada. No Fair Value Option is applied under US GAAP
- AIG and Berkshire seem to outperform the other top US P&C players but for the cost of materially higher investment performance volatility

Section 3: Role of investments

What role do investments play for a P&C insurer?

- From a P&L perspective:
  - The main role of investments is to insure a high and stable P&L level
  - Strengthen the company's competitiveness by offering premium discounts and enhancing brand trust
- From a Solvency perspective:
  - Investing in riskier assets increases the required regulatory capital and generates excess return that could increase the available capital
  - An optimized investment strategy should ensure that the net investment impact on the solvency ratio (Minimum Capital Test, MCT) is positive

The common practice among Canadian P&C players is to account for the expected investment return on the matching portfolio in the pricing of insurance products

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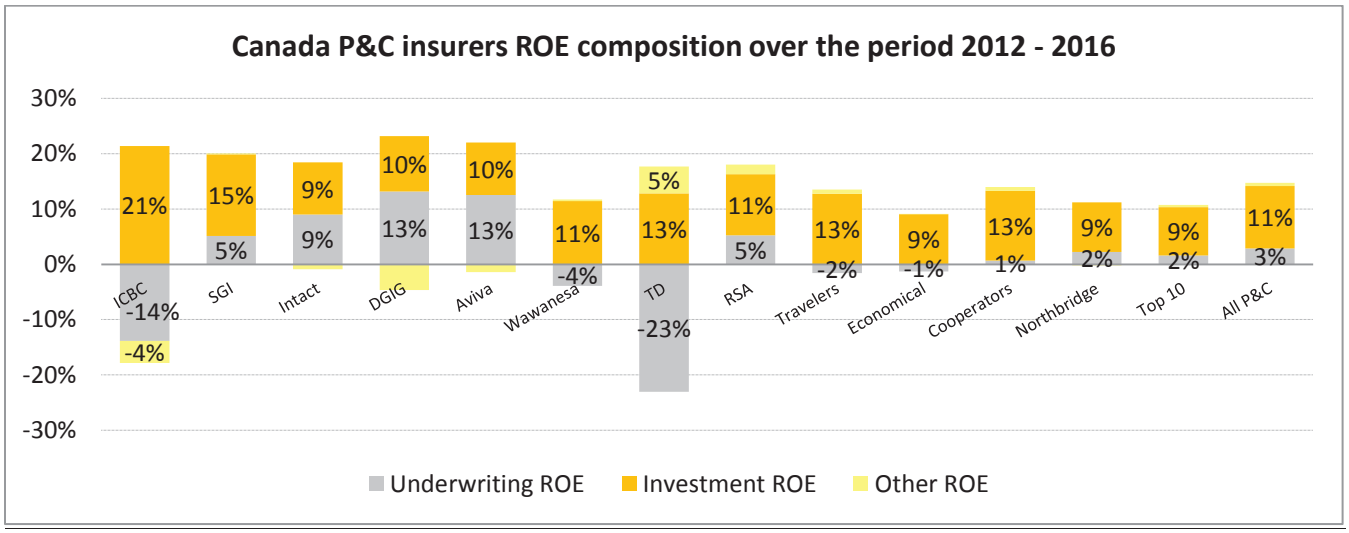
Chart 12: Composition of Return on Equity (ROE) over the historical period 2012-2016. ROE is calculated as the ratio of income over total equity



Key Findings

- ICBC's total ROE is 4%: the investment ROE is 21% and the underwriting ROE is -14%.
- Over the previous 5 years, 2012-2016, ICBC generated approximately $3.4 CAD billion from investment income, but lost approximately $2.2 CAD billion through its underwriting activities
- ICBC has the highest investment ROE, in part because of ICBC's low level of capital in recent years
- Only TD has lower underwriting ROE compared to ICBC, despite their higher capitalization

Section 4: Investment Management Structure and Process

A clear mission and a disciplined and structured investment approach are the basis for long term value creation.

ICBC Observations

- Based on the review of ICBC's documents and our interviews with key stakeholders, we understand that ICBC's current investment management process is:
  - Defined within the Statement of Investment Policy and Procedures related documents such as Statement of Investment Beliefs
  - Governed by the Board Investment Committee
  - Monitored through regular assessment of investment performance
  - Managed through the Strategic Asset Allocation (SAA) and ICBC's risk appetite for investment risks
- However, we observed that:
  - The Strategic Asset Allocation (SAA) optimization is outsourced to an external provider and conducted only once in 3-4 years
  - Performance measurement and reporting is conducted at regular basis by an external provider
  - Investment risk measurement and management is not very sophisticated. Produced risk metrics are in general considered as lagging indicators (i.e. standard deviation, Beta, tracking error, Sharpe ratio, etc.). More forward looking risk metrics (i.e. Value-at-Risk, Expected Shortfall, etc.) are not produced.

Recommendations

- We believe that ICBC's investment management process as current structured and formalized could be further improved by increasing in-house capabilities to:
  - Optimize the SAA internally and more frequently as needed
  - Produce internally performance measurement and reporting including performance and risk attributions
  - Produce internally prospective risk measures based on advanced techniques such as simulation Monte-Carlo and calibration of Economic Scenario Generator
- We believe a small investment risk management team (middle-office team of 3-4 experts) with appropriate tools (various investment risk management solutions exist on the market) would be very helpful in optimizing the risk taking and measuring the risk-adjusted performance.

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Appendix 3: Terms of reference for the ICBC rate affordability review

1. Background

On December 19, 2016, the Honourable Todd Stone, Minister of Transportation and Infrastructure and responsible for ICBC, directed the ICBC Board of Directors ("ICBC Board") to commission a comprehensive independent third party review ("Review") of ICBC. This direction letter is attached as Appendix 1.

The Review is intended to provide options for ICBC and government's consideration that would increase fairness and affordability related to Basic insurance, with the goal of future Basic rate increases being in line with the rate of inflation.

2. Current Context

Over the last several years, jurisdictions in North America, Europe and Australia have seen a significant increase in vehicle crash rates and claims costs, and are takings steps to mitigate these pressures. British Columbia ("BC") has seen similar upward trends with crashes and claims costs, although some external pressures on Basic auto insurance costs in BC are more pronounced than in other jurisdictions, and the effects of the ongoing pressures are more magnified due to the unique nature of BC's insurance model.

As the auto insurance landscape becomes more complex, government and ICBC have sought innovative solutions to respond to the increasing cost pressures. Over the past several years, government has introduced stricter fines for distracted driving, directed optional transfers of more than $1.4 billion since 2012 to reduce the increase for basic rates and help rebuild ICBC's Basic capital, and continued to invest in a variety of road safety initiatives. Government has also indicated that it will forego an annual dividend from ICBC for each of the next three fiscal years.

During this time ICBC has transformed its management and technology systems, implemented various strategic sourcing initiatives, strategically managed investment income, recruited additional resources, implemented numerous management and operational cost saving measures which has allowed it to hold operating costs flat for five years, and initiated an extensive fraud prevention campaign.

However, all of these measures will still not be able to fully mitigate the underlying causes of accelerating cost pressures.

3. Objectives and Principles of the Review

Per the attached direction letter, the ICBC Board's objective for the Review is to obtain recommendations from an independent consultant firm ("Consultant") following a comprehensive examination of all key cost drivers impacting the affordability and sustainability of Basic insurance rates, and potential mitigation strategies. As well, the consultant should consider whether there are

revenue opportunities available to ICBC through investment management or ancillary business opportunities being deployed in other jurisdictions. The Review will include an assessment of the experiences from other jurisdictions, as well as ICBC business processes and operations.

The overarching principles of the Review are to maintain public ownership of ICBC, and to work within the current model in order to keep Basic automobile insurance as affordable as possible for British Columbians. As such, the Review will encompass ICBC's mandate, as provided through the *Insurance Corporation* Act*, Insurance (Vehicle) Act and the Motor Vehicle Act, which is to provide Basic auto insurance for all BC motorists*.

4. Qualifications and Approach

The Consultant will bring qualifications that include:

- Demonstrated knowledge, expertise and global experience in the Property & Casualty insurance industry, inclusive of:
- Expertise and knowledge of auto insurance experience in other jurisdictions (Canadian and global)
- Proven actuarial expertise and claims experience, with the ability to effectively evaluate performance of claims
- Experience in working with auto insurance companies to successfully help reduce and mitigate claims cost pressures
- Demonstrated knowledge, expertise and experience of the BC auto insurance market
- Demonstrated knowledge, expertise and experience in delivering viable change recommendations within BC's economic and public policy environments
- A strong understanding of how insurance products interface with claims, policy administration and other insurance related systems
- Demonstrated knowledge, expertise and experience in general business practices that could reduce administrative or back office costs, or improve general business efficiencies.

The Consultant is expected to incorporate the findings of analysis that has been carried out in previous external reviews conducted over the past five years, unless there has been significant change in the underlying environment.

The Consultant must demonstrate considerable internal capacity and expertise, a global presence, and access to external automobile insurance business expertise where needed.

Before beginning the Review, the Consultant will work with the Chair of the ICBC Board and any personnel tasked by the Board to establish a clear project scope, detailed roles and responsibilities, detailed milestones and deliverables, develop a detailed work plan, obtain validation of the work plan, and propose a high-level strategy to conduct each phase of the work.

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5. Key Consultant Activities

Prepare a report that includes:

- Metrics which have been developed for measuring the performance of automobile insurance providers against specific elements of the business, to enable direct comparisons with the performance at ICBC
- A high level assessment of performance in 7-10 jurisdictions on selected aspects of the business, in order to identify those jurisdictions whose practices have delivered superior results and a deeper analysis of specific practices and results in the top 2-3 jurisdictions
- A summary of the Consultant's research findings
- A high-level assessment on the status of implementation of recommendations from previous independent operational reviews completed over the last five years
- Recommendations of actions to achieve the objectives of long-term Basic rate affordability and sustainability, including an assessment of implementation complexity, risks and rewards (e.g. potential savings)

6. Deliverables and Timeline

It is expected that the procurement process will be initiated on January 26, 2017, with the successful proponent selected and ready to begin work by March 24, 2017.

The Consultant will have worked with the Chair of the ICBC Board to establish the project scope, detailed roles and responsibilities, detailed milestones and deliverables, develop a detailed work plan, obtain validation of the work plan, and propose a high-level strategy to conduct each phase of the work.

By April 5, the Consultant will provide their first briefing on progress to date to the ICBC Board, and continue with monthly briefings over the course of the contract.

The Consultant will deliver a preliminary report to the ICBC Board not later than June 30, 2017.

7. Process

The review will be led by the Board Chair directly, and supported by a 3 person Committee of the Board of Directors, called the "ICBC Rates Affordability Review Committee". The Chair and Committee shall ensure that the review is in fact independent and comprehensive, and that decisions on scope will rest entirely with the Chair and Committee.

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Rating Agencies

(S. Feldblum, 3 Oct 2011)

Introduction

Rating agencies provide two types of ratings: credit ratings for corporate, municipal, and government bonds and financial strength ratings for life and property-casualty insurers. Credit ratings for bonds are the primary work for Standard and Poor's, Moody's, and Fitch; insurance ratings are primary for A. M. Best's. This syllabus reading focuses on insurance ratings, though it provides background information for credit ratings as well.

Bond ratings make securities markets more efficient by reducing information costs for investors and creditors. Securities underwriters and bond buyers expect issuers of bonds to obtain ratings from one or more agencies. A poor initial rating raises the yield needed to sell the bond, and a ratings downgrade may lower a bond's market value.[1] If the debt is held by a bank (not publicly issued), the debt may be recalled if its rating falls below investment grade status. The firm issuing the debt may be forced to sell assets or cease operations.

Similarly, financial strength ratings make insurance markets more efficient by reducing information costs for agents and policyholders. These ratings are particularly important for insurers, assessing their ability to meet their claims obligations. Reinsurers may need investment grade ratings to retain consumers; independent agents use ratings to place policies with higher rated insurers. Ratings have entered even into regulatory and legal arenas. The Securities and Exchange Commission designated Moody's, S&P, and Fitch as *Nationally Recognized Statistical Rating Organizations* who can provide ratings for certain securities regulations; other agencies have since been added. The NAIC Statement of Actuarial Opinion requires the Appointed Actuary to consider the ratings of reinsurers when evaluating uncollectible reinsurance recoverables. Some Canadian courts require A ratings for insurers writing life annuities to fund structured settlements.[2] Some insurance departments require an insurer to have an A- or better rating to write surety business. Statutory accounting values bonds with ratings of BB (Ba) or lower at market value, not amortized value. Risk-based capital (RBC) bond charges depend on the bond class, which is based on ratings by Moody's and S&P.

Recent downgrades of highly rated debt, such as triple-A rated mortgage-backed securities in 2008-2009, and failures of some highly rated firms (Enron, Worldcom, AIG) have evoked criticism of rating agencies. A 2006 law now requires extensive disclosure of rating agencies methods, to help investors and creditors understand how agencies determine the ratings. The oligopolistic nature of the rating agency industry and the (perhaps) greater efficiency of free markets in determining bond yields has provoked questions about the use of ratings.

Structure of this Reading

This reading is geared to candidates for the CAS exams. It focuses on financial strength ratings of property-casualty insurers, with background information about bond ratings in other industries. It presents alternative views on disputed issues, such as the structure of the rating agency market: do the agencies make insurance markets more efficient by providing information that is hard to obtain or do they mimic public information?

Section 1 explains how rating agencies help policyholders and agents by assessing the financial strength of insurers and their ability to pay claims years in the future. (Bond ratings affect coupon rates and issue prices; they are not the same as financial strength ratings.) Rating agencies can influence the capital structure, reinsurance arrangements, and business volume of their insurer clients.

Section 2 explains the ratings process: review of public data by ratings analysts, interactive meetings where insurers' managers portray themselves in favorable hues while providing hard data for the analyst's report, and decisions by the ratings committee. Rating agencies balance objective, quantitative data that is consistent across insurers and qualitative information that reflects unique attributes. The agencies combine research by ratings analysts with the experience of ratings committees.

Section 3 explains why ratings are vital for many property-casualty insurers: professional valuations of financial strength are efficient, many outside parties rely on the ratings, and few insurers are still unrated. High ratings are important requirements for reinsurance, surety, structured settlements, Homeowners, and some specialty lines. Many parties to insurance transactions, such as banks providing mortgages, property owners hiring building contractors, courts directing structured settlements, and clients of foreign reinsurers demand products from highly rated insurers.

Section 4 describes the meetings of ratings analysts with the insurer's senior managers. The topics discussed focus on qualitative information not available from public data: corporate form (holding companies, affiliates), capital structure (debt-to-equity ratios); information flow between executives and line personnel; strategic objectives (growth vs profitability; standard vs niche markets); financial goals (risk adjusted return on capital, economic value added); recent acquisitions and divestitures (business synergies; cost savings; integration of corporate cultures); competitive strategies for underwriting, pricing, and distribution systems (strengths and weaknesses vs peers; unique attributes of insurers); reinsurance arrangements and catastrophe exposures.

Section 5 examines salient attributes of rating agency capital standards: risk measures, stochastic models, and principles-based systems. Capital standards provide benchmarks for rating analysts and objective measures for insurers. They differentiate the agencies' methods, providing actuarial validation for the ratings and marketing tools to attract clients. They use up-to-date financial modeling: expected policyholder deficit and statistical distributions for risk measures, economic scenario generators for asset liability management, and discounted cash flow modes for reserving risk. Rating agency capital standards are now widely used for economic value added and return on risk adjusted capital, replacing the leverage ratios used previously.

Appendix A distinguishes financial strength ratings for insurers from debt ratings. A. M. Best's has the longest experience with insurer financial strength ratings; S&P, Moody's, and Fitch provide most debt ratings.

Appendix B covers the history and growth of the rating agencies. The advent of non-investment grade bonds in the late 1970's, the increase in sovereign debt since the early 1980's, and SEC rules led to rapid growth of the rating agencies in the past 30 years.

Appendix C reviews public perceptions of rating agencies: impartial judges of credit worthiness whose analysis of financial strength move markets or an oligopoly protected by barriers to entry paid by the firms they rate.

Appendix D provides exercises to help readers grasp the themes of this reading. The exercises give examples of the statements in the text of the reading.

SECTION 1: RATING AGENCIES PROVIDE MATERIAL BENEFITS TO INSURANCE POLICYHOLDERS

Policyholders depend on the financial strength of insurers to fulfill long-term promises, but lack the expertise, resources, and time to examine insurers themselves. Rating agencies hire financial analysts, actuaries, and economists to assess the financial strength of insurers. Interactive meetings with senior insurance managers give them propriety information about operating strategy and competitive advantages. The willingness of insurers to pay for ratings and of agents and investors to base business decisions on these ratings testify to the public acceptance of the ratings. Firms pay handsomely to keep high ratings.[3] Insurers may spend $1 million a year (or more) on ratings, consisting of fees to rating agencies and internal costs to prepare for rating agency meetings.[4]

Some recent studies suggest that rating agencies do not respond as quickly as the bond and stock markets. Market traders immediately assess a firm's financial strength, whereas rating agency analysts may not respond for months. New information about a firm's operating performance leads to quick changes in stock values. In contrast, agency downgrades are slower; agencies prefer to wait until they verify their information.[5]

Illustration: An insurer with a $200 million market value has $800 million of bonds with average durations of six and a half years. If interest rates rise 200 basis points, the insurer's market value declines $100 million.

Investors bid down the insurer's stock price, but rating agencies may not downgrade the insurer for half a year. An insurer's investment portfolio is detailed in its Annual Statement, which is updated annually. The rating agency does not evaluate the insurer as quickly as investors do, and it may wait to downgrade the insurer to see if interest rates turn down.[6]

Section 2: Ratings Process Combines Quantitative Data with Qualitative Valuations

Insurers are rated for their claims-paying ability, often to meet requirements of agents, banks, consumers, and courts. Unrated insurers can be at a disadvantage: independent agents hesitate to use them and some banks do not issue mortgages without property coverage from a rated insurer. Over 90% of insurers are rated by A. M. Best's or another agency, and Best's surveys are widely reviewed in the insurance industry. Insurers who do not pay for interactive ratings may receive public ratings, with less control over the information reviewed by the agencies and greater chance of errors.[7]

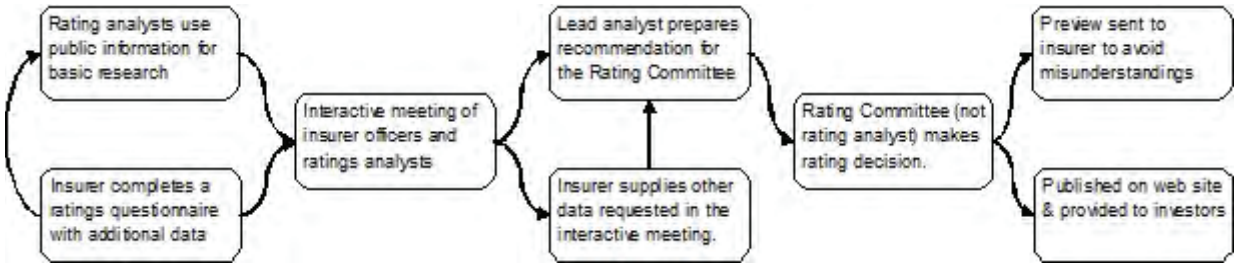
The ratings process is intrusive, time-consuming, and expensive. Ratings analysts meet with insurer officers responsible for underwriting, reserving, reinsurance, financial reporting, investments, risk management, and the insurer's major lines of business. The insurer's business strategy and internal management are clues to its resilience against adverse scenarios. The agencies focus on the quality of an insurer's managers and business strategy, They do not judge if a particular underwriting or investment decision was wise, as random fluctuations and market movements distort observed results. They focus on the insurer's managers: their knowledge of industry trends, their experience with adverse scenarios, and their handling of current problems.

Insurers decide the substance of their presentations, and they select the information they provide to agencies. Rating analysts may question the insurer's views, but they generally avoid specifying the data they want. They evaluate the integrity of their clients: deceptive, misleading, or incomplete information may lead to poor ratings.

An interactive rating has five steps:

1. Background research by the ratings analyst and submission of proprietary data by the insurer.
2. Interactive meetings between ratings analysts and senior managers of the insurer.
3. Preparation of ratings proposal by lead analyst and submission of additional data by the insurer.
4. Decision by the ratings committee after presentation by the lead analyst.
5. Publication of rating on public web sites and provision of analysis to fee-paying subscribers.

Background to an interactive rating



1. Public ratings rely on public data only, with no input from the insurer; interactive ratings rely also on proprietary data and meetings with the insurer's senior managers. If an insurer pays for an interactive rating one year but does not want an interactive rating the next year, the agency may issue a public rating based on published financial statements, SEC filings, earnings reports, and similar data. An insurer expecting a downgrade may refuse an interactive rating, but the agency may proceed with a public rating to inform investors (and other audiences) that the previous rating is no longer valid.[8]

Most insurers have financial strength interactive ratings, often from two or more agencies. An insurer already rated by A. M. Best's may request another rating from S&P, Moody's, or Fitch, for several reasons. The insurer may want to issue debt through a holding company and seeks a rating from an agency with more experience in debt ratings; it may be publicly traded and wants a rating from an agency better known to investors; it may be dissatisfied with its current rating and believes the second rating will be higher.

The insurer prepares a presentation for the interactive meeting consistent with the agency's outline.

The rating agency assigns an analytical team to conduct basic research, using data from the insurer's Annual Statements and GAAP reports of recent years: reserve estimates from Schedule P, reinsurance recoverables from Schedule F, investment portfolio from the asset schedules. The analysis is *not* shared with the insurer; it serves as a check on the insurer's forthrightness and integrity and is used where the insurer's submitted data are absent or dubious.

Public data are rarely sufficient for ratings analyses. For example, reinsurance data do not show attachment points and limits of in-force treaties; investment schedules have scant data on derivative securities; reserving schedules do not show the segmented data that insurers use for their estimates. Rating agencies ask insurers to disclose underwriting, reserving, investment, and operating performance along with supporting data.

Rating agency analysts generally specialize by industry.[9] The rating team has a lead analyst familiar with the lines of business written by the insurer and one or more specialists. For example, if the insurer writes property exposures in Gulf Coast states, an analyst with expertise in windstorm models may join the team. If the insurer writes long-tailed lines of business, one analyst may be an actuary to prepare reserve analyses.

The rating agency requests certain presentations at the interactive meeting. Some are generic, such as business strategy and risk concentration guidelines, with a focus on information flow: how results are reported to executives and how directives are passed down to underwriters. Other topics are specific to insurers writing certain lines, such as how asbestos claims are handled or what reinsurance is used to control windstorm exposures. The insurer decides on the content of the presentation and may add additional topics.

For an initial meeting, rating agencies ask insurers to provide extensive background material. Some agencies provide checklists, to ensure complete information. The common types of requested information are

- Statutory Annual Statements and GAAP financial statements for past five years.
  - Quarterly financial statements for the past year, if available.
- History of the company focusing on major events, such as mergers, acquisitions, and expansions.
  - Biographies of senior executives with their insurance industry experience.
- Investment strategy, policy, and guidelines, and
  - How the investment committee of the Board of Directors reviews investment department activities.
- Organizational charts covering corporate structure and senior manager reporting relations.
  - Capital structure showing debt issues by holding companies and affiliates.
- Product descriptions and business strategy for each line.

The substance of the qualitative information varies greatly. Business strategy by line may be a paragraph for one insurer and a report for another. Rating agencies evaluate how insurers respond to the requests for information: does the insurer honestly compare its performance with that of its peers or does it provide summary figures that are already publicly available?

The interactive meeting is like an intricate dance: the rating agency seeks the insurer's knowledge of its risks and potential liabilities, and the insurer seeks the agency's view of its financial strength. The agency reviews Schedule P figures but wants also the insurer's reserve estimates, especially for exposures that are hard to estimate from publicly available data. During the interactive meeting, it compares the insurer's estimates with its own valuations from public data. The public data are used to evaluate the integrity of the insurer. If the

insurer's workers' compensation reserve estimates agree with Schedule P figures, the rating agency is more likely to trust its asbestos and pollution reserve estimates.

For example, the rating agency adjusts reserves in long-tailed lines for adequacy and discounts them at a conservative discount rate. But reserve adequacy, investment yields, and loss payment patterns differ among insurers, so the rating agency wants the insurer's analyses of reserve adequacy and discounting methods.

If the insurer has long-term debt through a holding company, goodwill, or substantial deferred tax assets, the rating agency computes net income after debt payments and taxes and re-states leverage ratios as a function of tangible equity capital.

An insurer should not withhold potentially damaging data that the analyst does not request. An insurer who strengthens year-end reserves after assuring a rating agency that its reserves are adequate loses credibility and worsens the agency's reputation with investors. The agency may place the insurer on a ratings watch until its next meeting, and it is less likely to trust the insurer's future reserve estimates. For insurers who need ratings each year, it is almost always better to inform agencies of likely problems before they become evident.

Illustration: Rating agencies use industry ratios of asbestos loss reserves to annual loss payments in recent years. If an insurer presents exhibits with low ratios that are not supported by data, the exhibits may not be presented to the rating committee. Some insurers tell rating analysts that the analysis is confidential and can not be shared. The analyst will not demand more information. But the analyst gives the rating committee a conservative (worst-case) estimate from industry figures, rather than the insurer's figure. The estimate reserve is usually greater than the insurer's own figures.

An insurer's officers are reluctant to disclose weaknesses, and their lack of candor may harm the rating. Undisclosed credit problems that lead to future write-offs ruin the insurer's credibility and may contribute to ratings downgrades. Informing rating agencies of expected write-offs of receivables before they occur may keep a good rating. Rating agencies who learn of adverse developments from the trade press after the management meetings often downgrade the offending firm.

Some insurers use a dry run with a ratings advisor. Financial underwriters such as Morgan Stanley serve as ratings advisors for firms issuing new debt, and actuarial consulting firms perform a similar role for insurers. The advisor takes the place of the rating agency, meets with the insurer's senior managers, and tells them its impression of their presentation. The insurer's managers may learn that their reticence harms the agency's view of their integrity, and that they must supply hard data to support a high rating.

A rating committee decides the rating; the rating analyst presents the insurer's data to the committee.

To promote consistency, the actual rating decision is made by a ratings committee, not an individual analyst. Rating analysts have different views on financial strength and rating factors. The lead analyst prepares a rating proposal for the committee, but the rating decision comes from the committee.

The rating committee has no permanent members; it is formed anew for each case from senior members of the agency. The insurer does not know its members, to avoid improper inducements. The ratings analyst is an intermediary, summarizing public data and proprietary information from interactive meetings into a report to the committee. The analyst may prepare an initial rating that is reviewed by the committee. Analysts are flexible in meetings with insurers, letting insurers volunteer information instead of eliciting data by intrusive cross-examinations. Some insurers mistakenly think that an analyst's acceptance of an unsupported assertion is a positive sign. But the rating committee relies on hard data. Experienced insurers provide the analyst with convincing data supporting their story.

Agencies generally use a top-down approach, starting with economic and industry forecasts and proceeding to the insurer's position among its peers. The committee evaluates underwriting cycles by line of business and

then the insurer's own performance, risks, and management quality. The industry evaluation is made by senior officers of the rating agency, bringing more consistency into the ratings.

The rating analyst is the insurer's advocate, and the insurer makes certain that he or she has the necessary supporting data. Knowledgeable insurers provide the rating agency analyst with the data needed for the report to the rating committee. The interactive meeting between the insurer and the analyst is the preparation for rating meeting between the analyst and the committee. Tangential material, such as slide presentations that are not backed by hard data, are not presented to the committee. Analysts collect data and information about the insurer to present to the rating committee. Analysts who receive inconsistent or incomplete data may present the information to the rating committee in a less favorable manner.

Ratings and outlooks

The committee decides on ratings by majority vote, though opinions of senior officers of the agency are often followed. But agencies hesitate to change ratings too quickly. Erroneous downgrades anger clients, who pay the agency's fees; erroneous upgrades ruin the agency's reputation with investors and agents.

Agencies delay down-grades by repeating the current rating with a negative outlook for several months. They reduce the rating only if the insurer can not raise capital or otherwise assuage the committee's concerns.

Initial ratings may be private or public; subsequent ratings are generally public. The rating agency informs the insurer of the committee's decision. If the insurer requested an initial rating and the agency has not previously rated the insurer, the insurer either agrees to a press release or requests that the rating be kept private. Decisions of the committee are appealed only if the insurer believes a material error was made and provides data correcting the error.

If the agency has previously rated the insurer, the rating is posted on the agency's web site and released to the press. Initially, rating agencies required subscriptions to their ratings and charged subscribers for the rating information. But information travels fast in efficient capital markets and most users need only summary figures (such as the letter rating). Rating agencies now freely provide basic information, such as the letter rating, and require subscriptions for more detailed assessments of insurers' solvency.

Section 3: Ratings Are Essential for Many Property-casualty Insurers

Almost all insurers are rated, compared to a small percentage of firms in other industries; some large insurers have ratings from two or more agencies, despite their high cost. Other firms need ratings if they issue debt securities or are publicly traded. Most insurers have no debt and are not publicly traded, yet almost all are rated, for three reasons: (i) agents are wary of unrated insurers, since they might be financially distressed, (ii) third-parties rely on outside assessments of insurer solvency, and (iii) rating agencies are efficient at assessing financial strength.

Unrated insurers: In other industries, most firms with no debt have no ratings. But almost all insurers are rated, except for new firms. It is less expensive to pay for a rating than to demonstrate financial strength individually to others.[10]

Reliance by consumers and third parties: Independent agents use ratings to select insurers, and insurers use ratings to select reinsurers. Agents might be sued for providing insurance from a financially weak insurer. Reinsurance officers at primary insurers must evaluate the ability of reinsurers to pay obligations years in the future. They rely on commercial ratings, and an unrated reinsurer might not even be considered.[11]

Efficiency: Evaluating financial solidity requires expertise and extensive data. Most agents, underwriters, and even some regulators do not have the time, experience, or resources of the rating agencies to thoroughly research the financial condition of all insurers.[12]

High ratings are important for certain lines of business.

Financial ratings are particularly important for reinsurance, surety, structured settlements, homeowners, and some specialty lines. Insurers with low ratings are not able to compete in certain markets. Rating agencies assess financial risk efficiently and reduce costs when safety is essential. Third parties who rely on insurance coverage often demand that the insurer obtain a rating, as the paragraphs below describe.

Reinsurance is a global market, and many reinsurers are not licensed in the United States. Excess-of-loss coverage is long-tailed, and reinsurers are exposed to catastrophe and other large claim risks that are hard to foresee. Primary insurers need to assess the financial strength of reinsurers to balance premium vs credit risk. Strongly capitalized reinsurers may charge higher prices; some reinsurers provide letters of credit or other collateral to secure their obligations, but the security is expensive; weakly capitalized reinsurers may charge low premiums. A primary insurer can use the reinsurer's rating as one tool to assess the financial strength of the reinsurer. Small reinsurers with A ratings can compete with larger peers. A large reinsurer that is downgraded below investment grade may not be able to renew its treaties.

Illustration: Scor Re was the ninth largest global reinsurer in 2001. After large losses in 2001-2002, its net worth declined 70%, and its rating dropped to BBB– by the end of 2003, below the A– level normally expected of large reinsurers. It could not renew treaties with primary insurers outside its home country, and it left several reinsurance markets.[13]

Some reinsurance treaties explicitly link ratings and security. A treaty with a downgrade clause may specify that if the reinsurer fails to maintain an certain rating, such as A- or better, it must deposit funds covering its obligations or provide letters of credit as security. The downgrade clause benefits both parties: the reinsurer avoids the costs of collateral as long as it maintains its rating, and the primary insurer gets collateral to cover reinsurance recoveries if the reinsurer cannot meet its obligations.

Insurance often provides security to a third party. For example, a *surety* ensures that a construction firm will complete a project. Many sureties are specialized firms, exposed to high surety losses in recessions. Principles may require construction firms to obtain surety contracts from A rated companies. The cost of examining the surety's finances and risks are incurred by the rating agency, not by each principal. The rating also reduces the surety's costs. Instead of reducing prices or advertising heavily to persuade principals of its financial stability, it provides its rating.

Banks require property insurance to issue mortgages, often requiring that they be listed in the policy as payees up to the amount of the mortgage. As a lien-holder, the bank receives the insurance payment if the property is destroyed. The banks can not independently verify the financial strength of the insurer, so they rely on commercial ratings.

Personal property is subject to natural catastrophes. An insurer with excessive risk (high concentration of exposures in coastal areas with inadequate reinsurance arrangements) may become insolvent after a hurricane and unable to pay claims to banks providing mortgages. It is too expensive for banks to assess the solidity of each insurer. Instead, banks may require Homeowners coverage on mortgaged properties from insurers with investment grade ratings, relying on rating agency's risk evaluation.

Structured settlements indemnify accident victims by periodic payments, often funded by life annuities. These settlements are particularly important for young children or persons incapable of handling large sums of money. The casualty insurer paying the structured settlements may buy a life annuity from a life insurer to fund the payments. To ensure that claimants receive secure funding, some Canadian courts require structured settlements from A rated insurers, and plaintiff attorneys often make similar demands in the U.S. Courts and attorneys can not independently judge the financial strength of insurers, and they rely on commercial ratings.

SECTION 4: THE INTERACTIVE MEETING WITH THE INSURER'S SENIOR MANAGERS

The rating agency sets the agenda for the interactive meeting, with the insurer providing the substance. The rating agency expects to meet with senior managers for investments, underwriting, finance, actuarial, and reinsurance, as well as with the chief risk officer. Organizational, management, and capital structures, operating characteristics, business objectives, financial goals, reinsurance arrangements, and competitive strategy are major elements of interactive meetings. An insurer with much debt issued by a holding company can expect extensive analysis of its capital structure and associated risks, and a stand-alone monoline medical malpractice insurer can expect a focus on its reinsurance arrangements.

Interactive Meetings Focus on Qualitative Issues Not Available from Public Data.

Quantitative data, such as operating income, combined ratios, and investment yields, are not always ideal predictors. Underwriting cycles, asset volatility, and catastrophes affect past performance but may not affect an insurer's future returns. Rating agencies stress qualitative aspects of insurers' strengths and weaknesses, such as business strategy and management expertise.

Many qualitative attributes, such as exclusive sales forces, high name recognition, and reputations for honest claim settlement are expensive to develop and have uncertain benefits. Rating agencies judge the costs vs potential rewards of developing qualitative attributes. For example, acquisitions and mergers have uncertain benefits and high costs; they may lead to a ratings upgrade by one agency and a downgrade by another. In 2010, after multi-billion dollar investment losses and a government bail-out, AIG sold parts of its international operations to Prudential (a British life insurer) and Metropolitan Life (a New York life insurer) at prices favorable to the buyers. Most analysts viewed the acquisitions positively for Prudential and MetLife, who replaced AIG as global leaders. But Moody's changed its outlook on MelLife to negative after the deal, issuing a press report that the acquisition may not produce the anticipated synergies.

Qualitative attributes must be objective and measurable.

Underwriting expertise is critical for insurance operations, but rating agencies can not easily judge underwriting expertise. Quality of claims service is subjective; rare is the insurer that does not say its quality is best. Brand names may lead to greater consumer persistency and high renewal rates. But brands are more important for industries with high profit differentiation. Many consumers view insurance as the same from all firms. Brand loyalty may lead to high renewal rates but not to better new business. Economies of scale may reduce costs from larger volume of business. Insurers serving small niche markets may have lower ratings, unless they show long-term higher profits from greater underwriting expertise. But large insurers must show measurable effects of size to improve their ratings.

Organizational structure: Does the insurer have subsidiaries or affiliates; is it owned by a holding company? Are subsidiaries and affiliates used for pricing (different rates by legal entity), are they intended for operations in specific states or countries, or were they formed to handle discontinued business (asbestos, pollution)? An outline of the insurer's organizational structure can be gleaned from public documents, but the reasons for the different entities is not shown. Rating agencies are especially concerned about off-balance sheet liabilities for debts of affiliates. They first evaluate each legal entity, and then raise or lower the rating for benefits or liabilities of the corporate group. For example, a U.S. insurer that has a Japanese subsidiary and guarantees its liabilities to satisfy Japanese regulators faces risks that a domestic-only company does not have.

Capital structure: Many insurers are financed by equity only; others have complex capital structures. Topics discussed in rating meetings include: Is the insurer owned by a holding company that has issued debt? Is the debt guaranteed by the insurer's assets? Has the insurer or holding company issued hybrid securities, with debt characteristics but treated as equity in statutory accounting? Has the insurer secured loans by affiliates or subsidiaries? Have subsidiaries gone bankrupt without being bailed out by parents? What is the coupon rate on the holding company debt? How much of statutory capital is intangible (goodwill, deferred tax assets)?

The relevant financial ratios depend on the capital structure. Agencies examine net income after taxes, debt, and lease charges. The debt may be issued by a holding company, an affiliate, or a subsidiary, and it may not be evident on the insurer's own financial statements. If the insurer has intangible capital, as is often true after an acquisition, the rating agency computes its ratio of debt to tangible capital to ascertain its financial leverage.

Management structure: How long have senior managers worked in the insurance industry? Are business lines and branch offices relatively independent, or do home office managers control major underwriting decisions? Are line operations separate from staff operations, or do business units operate as small insurers with internal staff support? For example, does personal auto have its own actuarial, finance, and claims staff?

No one structure is necessarily better than others. Rating agencies focus on how quickly senior managers learn of emerging risks. For example, accelerating medical inflation may cause persistent losses in several lines of business. Separate management for each line may help underwriting flexibility, but senior managers must be able to assess overall enterprise risks.

Strategic objectives: Insurers have different objectives and business strategies. Some insurers seek continued growth, even at the expense of short term losses; others seek stable profits even at the cost of lower market share. Rating agencies ask: Does the insurer follow market prices through hard and soft markets? Does the insurer seek niche markets? Does it have a strong brand name? Does it stress low cost for its products?

Size and efficiency are important, and rating agencies evaluate market share, competitors, and government licensing as an exclusive distributor. Efficiency may increase market share, which leads to further benefits. In the United States, low acquisition costs and independent pricing by personal lines direct writers led to their dominance of personal auto and homeowners, economies of scale, and further cost reductions.

Market share growth from lower prices is a two-edged sword. Rating agencies are wary of rapid growth that is not justified by other insurer attributes. Interactive meetings are essential for judging qualitative attributes, since the rating agency relies on the insurer to interpret the observed data. Rapid market share growth is good if it reflects superior products and bad if it reflects underpricing. The insurer must demonstrate that its growth rests on successful business strategies and validate them by actual performance. An apparent advantage with poor operating results means the insurer can not convert favorable attributes into market growth or profits.

Agencies focus on coherence of strategies and insurers' ability to attain them. Insurers with costly distribution system might focus on niche markets with alternative distribution systems for target consumers, not on price competition for generic products. Insurers accepting low returns to gain market share should be able to demonstrate the long-term rationale for this strategy and their ability to withstand short-term losses.

Financial goals: Insurers and rating agencies use a variety of performance measures. Financial statements show statutory and GAAP earnings, and many insurers compute some type of economic income. Rating agencies ask: Does the insurer target return on statutory surplus, GAAP equity, or invested capital? What financial measures are used for performance measurement and manager bonuses? How closely have actual returns matched target returns in past years? How do the target returns compare with industry averages? How does the insurer estimate economic income? Does it use economic value added (EVA) or risk adjusted return on capital measures (RAROC)?

Acquisitions: Profitable insurers have the money for good acquisitions, which lead to further profits. Some large insurers achieved their dominance by fleets of inter-related companies built from sensible acquisitions. But acquisitions can be as harmful as they are helpful. Fewer than a third of corporate acquisitions increase the market value of the combined entity. Acquisitions may cause downgrades if the agency doubts the insurer can absorb the new firm into its culture or if expected synergies offset costs. An acquisition may fail to produce the expected benefits, and rating agencies look closely at complex corporate transactions.

Insurers may discuss potential acquisitions with rating agencies to avoid actions that may spark a downgrade. After the acquisition, they provide data showing expense reductions, division of responsibilities, and smooth transition of the new managers into the parent firm.

Rating agencies closely examine acquisitions that strain the resources of the parent. They ask: How well have past acquisitions been integrated? Does the insurer contemplate further acquisitions? Even good acquisitions prompt rating reviews, since anticipated synergies often dissipate before they are realized.

Diversification may reduce insolvency risks, but it must be balanced against core competencies.

Diversification smooths income and reduces solvency risk, but may reflect a straying from core competencies. Geographic spread of risk is essential for catastrophe perils, such as hurricanes for homeowners or terrorist attacks of office buildings for workers' compensation. If the insurer has underwriting expertise in each region, the geographic spread of risk reflects better agent placement. Single state insurers rarely receive the highest ratings, unless they are exceedingly well capitalized or are part of a larger insurance fleet.

Diversification by product is reasonable only if it is done for underwriting purposes. Insurers, like other firms, focus on core strengths where they have underwriting expertise and cost advantages. Expansion to new lines is risky: high costs of new business, lack of expertise, and costs of new distribution systems. Rating agencies examine insurers with much new business to judge if synergies with existing business justify the expansion.

Some rating agencies emphasize core competencies more than diversification. Insurers with well-structured exclusive agency or direct marketing systems need not use other distribution channels. Multiple distribution channels sometimes cannibalize each other, with growth in one channel coming from declines in others.

The ideal qualitative attributes are product innovations that are not easily copied.

Good qualitative attributes differentiate an insurer and are not easily copied. In other industries, successful firms may have patents and trade secrets. In food industries (soft drinks, chocolates), firms may even avoid patents to keep their formulas secret. Brand names and patents do not always reflect objective differences. For example, consumers of beer and cigarettes are loyal to particular brands even if they can not distinguish the brand in blind tests.

Insurance policies, class plans, and rates are public information that are easily copied and cannot be patented. For example, medical payments coverage in personal auto, homeowners, and general liability provide first aid treatment to accident victims and have high appeal. They cost little because of their low limits and may even reduce costs by preventing bodily injury claims. But the coverages are now offered by all insurers. Rating agencies may not view coverage innovations as a persisting qualitative attribute.

Class plans are best if they are not easily copied. Generalized linear models gave some insurers long-term advantages because their peer companies did not have the actuarial and statistical expertise to replicate the plans. More refined class variables, such as more age distinctions in personal auto, are easily copied and have less long-term value. The first insurer to use a new class variable, such as credit rating in personal auto, may build a profitable block of preferred business. High market share with strong policyholder loyalty (many renewals) may lead to long-term profits.

New product designs, such as package policies (homeowners and small businessowners), high deductible liability coverages, claims-made professional liability; and various specialty coverages, give the first insurers several years of high profits. Low cost generic products with high returns on capital, such as personal auto policies with discounts for good credit scores, and differentiated products with premium pricing, such as high deductible policies in states with large workers' compensation residual markets, were ideal product innovations. Their success lead eventually to copying by others, but they provided strong competitive advantages for the insurers who first sold them. But policy forms are filed with states, publicly known, and not patented. Many new product designs have little effect on long-term profits.

Optimal operating (underwriting) characteristics depend on the insurer's lines and business strategy

Rating agencies stress balance sheet strength (including loss reserve adequacy) and operating performance. They emphasize balance sheet strength for writers of short-tailed lines of business with high catastrophe risk. They emphasize stability of annual earnings for writers of long-tailed lines with high reserving risk.

Underwriting is the core of insurance operations. The pricing and underwriting standards that underlie an insurer's strategy are not easily quantified. The insurer's task is to persuade the rating agency that competitive strengths will persist and weaknesses will be corrected.

Rating agencies judge insurers against their peers and set objective criteria for consistent evaluations. All insurers say they underwrite carefully and provide excellent service; these assertions carry little weight. Rating agencies evaluate the coherence of the insurer's strategy. Products geared to specific markets with profitable risk-adjusted returns on capital indicate a sustainable business strategy.

Rating agencies have financial ratios for each insurer: combined ratios, investment yields, and pre-tax net income. Interactive meetings allow rating analysts to evaluate the underwriting and pricing characteristics that provide competitive advantages to the insurer. The paragraphs below summarize the operating issues normally covered in the interactive meetings.

Lines of business: What competitive advantages does the insurer have in its major lines of business? How do niche markets (earthquake insurance, substandard auto, surety, excess layers) fit with the major lines? Does the insurer sell package policies to select policyholders?

Pricing: Rating agencies evaluate pricing strategy, not specific techniques: does the insurer target high or low quality insureds? Insurers targeting high quality insureds may reduce the price based on conservative underwriting and focus on high persistency for long-term profits. Insurers targeting low quality insureds may increase the price to cover higher than average losses and focus on underwriting standards that weed out bad risks. In many lines, high cost insureds have higher risk but higher margins. Low cost insureds have low risk but low margins.

Underwriting controls: In long-tailed lines of business, pricing and underwriting errors may compound over many years. Rating agencies want to know what feedback line underwriters get. For long-tailed lines, how quickly do they learn their policy year results? For lines with catastrophe exposure, do they know their contributions to tail value at risk before catastrophe events occur?

Insurance losses are often settled years after policies are written, and underwriting managers may not have good measures of profitability. Actuarial bulk reserves, excess-of-loss reinsurance costs, and costs of holding capital must be allocated to underwriting offices so that line managers can estimate ultimate results.

Illustration: An umbrella underwriting unit often has favorable policy year combined ratios on direct business, since losses emerge slowly and may not be recognized for years. Rating agencies judge whether bulk reserve estimates, reinsurance costs, and the costs of holding additional capital for umbrella policies are provided to the manager of the umbrella underwriting unit and used to assess the return on capital.

Long-term strategy: Rating agencies stress the strategic considerations affecting long-term profits. How does the insurer expect to outperform its peers? What are the insurer's strengths and weaknesses? How well does the insurer know the strategy of its peers? Does the insurer target niche markets, or does it compete on cost for all insureds?

The rating agencies use a multi-stage analysis: industry, line, and insurer. They evaluate first the prospects for the property-casualty insurance industry based on expected investment yields and underwriting returns. Bursting of a housing bubble and widening credit spreads in 2007-2008 led agencies to downgrade insurers with exposure to mortgage-backed securities and corporate bonds (much of the industry).

Rating agencies evaluate prospects for each line of business based on its likely growth, current capitalization, and insurers' negotiating power with their consumers and suppliers. For example, workers' compensation for manufacturing firms faces declining revenue as workplace hazards decrease. Insurers that served traditional manufacturing firms face severe contraction unless they have feasible strategies for alternative markets. The third stage focuses on the individual insurer, evaluating its competitive advantages relative to its peers.

Distribution systems: Supplying products to consumers is expensive: insurance acquisition costs may be 20% or more of premium. Efficient systems reduce costs and improve marketing control, but they require high up-front investment, such as subsidies to exclusive agents in their early years, discounts for insurance coverage sold through banks, discounts for insurance sold through voluntary associations, advertising campaigns to establish brand names, direct response insurance sales to avoid agency costs, and participation in internet web sites. Initial expenses lower current profits but may improve the insurer's future profits.

Rating agencies stress control, cost, and consumer access. Does the insurer control its distribution system (exclusive agents, direct marketing) or does it work through independent agents and brokers? Are its costs lower or higher than those of its peers? What are the conversion ratios (new policy sales over quotations) and renewal ratios by line? Does the distribution system reach the target market?

Control: Exclusive agents give insurers control over their consumers: they better select markets and classes and retain insureds. The agent is an employee of the insurer, and the insurer own the rights to renewals. The insurer decides the marketing strategy and targets consumers. It can price higher without fear that agents will switch consumes to competitors; it can price lower to gain market share and retain the renewals.

In contrast, independent agents own their renewals and can switch policies to competing insurers. They avoid insurers in financial distress, lest they be responsible for policyholder losses. An unexpected loss from stock market declines, the effect of a hurricane on the insurer's capital, or adverse reserve development may result in a ratings downgrade, leading agents to switch policies to higher rated peers. The lower business volume and a perception of financial weakness may also encourage agents to avoid the insurer.

Rating agencies consider the control that *direct writers* have over their business. A direct writer can more easily change its mix of high vs low cost homes or urban vs rural autos to meet perceived risks. Quantitative data may not show poor performance in the current year, but lack of control over consumers may hurt future results. The following paragraphs describe how rating agencies balance attributes of distribution systems.

Cost: Independent agents have high costs. Exclusive agency forces are expensive at first, requiring multi-year subsidies for new agents to set up offices, but they have high retentions at low cost in subsequent years. Independent agency insurers rarely adopt exclusive agency systems, lest their current agents switch business to competitors. Exclusive agencies reduce costs for long-persisting lines (personal auto, homeowners, small commercial) by their low renewal commissions. Similarly, direct marketing has low variable costs and works well for insurers who dominate markets, but it may have high fixed costs (advertising) and low response rates.

Consumer access: Internet sales are low cost, but they may not provide access to preferred consumers. Visitors to insurance web sites are often high cost insureds unhappy with their current premiums. The insurer lacks screening by the sales agent. Direct marketing through voluntary associations gives access to preferred consumers, but the response rate is low, causing a risk of adverse selection. Some direct marketing systems allow little selection of insureds. Many insurers have been burned by TV sales that led to adverse selection.

Direct marketing distribution systems do not promote brand loyalty, since the insurer or agent has no personal contact with consumers. TV marketing stresses low prices, which may limit profits. Voluntary associations may switch an entire block of business to a competitor with lower rates.

Growth: Growth is a result of past profit and a harbinger of future profit. Successful insurers grow, and growing insurers achieve market power. But growth must be judged critically. Is the insurer growing faster or slower

than its peers? Does its growth vary with the underwriting cycle? Does growth stem from lower premiums or better underwriting? In what lines does the insurer expect to grow? Where does it expect to shrink?

Rating agencies are especially concerned about insurers who can not easily shift away from low return blocks of business. An insurer with an exclusive agency force in a state that has suppressed rates below adequate levels may feel that it can not reduce its premium volume because of commitments to its agents. Nimbler insurers forecast expected profits for different states and lines and adjust their marketing accordingly.

Insurers speak of profitable growth; rating agencies judge if the growth is indeed profitable. Almost all insurers say they do not follow markets blindly, cutting rates as underwriting cycles turn down simply to retain market share. Rating agencies assess if business strategies seem likely to succeed. For example, a rating agency may question an insurer that says it writes only profitable business and reduces sales in soft markets but has a direct writing sales force that is compensated primarily as a percentage of new business.

Technology: Insurance is a technology driven industry. Insurance policies have changed little, but pricing and underwriting have changed over time as new technology has allowed better analysis of data. Rating agencies judge if an insurer's technology is up-to-date. Does the insurer provide relational databases to pricing and accounting personnel? Does the insurer use current pricing, reserving, underwriting, and ERM tools?

Generalized linear models (pricing), stochastic reserving tools, credit scoring (underwriting), and economic capital models are current actuarial tools viewed favorably by rating agencies. These actuarial tools take several years to implement, and they have tremendous effects on selecting and valuing good business.

Regulatory interaction: Insurance is highly regulated. Quick approval of policy forms, premium rates, and class plans from regulators gives insurers competitive advantages over their peers. Rating agencies check if the insurer lobbies in state and federal arenas or relies on trade organizations. Does the insurer have rate filings and class plans approved by state insurance departments, or does it rely on bureau filings and class plans?

Claims handling: Insurers' cash outflow depends on their claims handling. Some insurers settle claims quickly to avoid litigation expenses; others fight dubious claims to avoid future claims. Asbestos claims show the merits of both strategies. Settling a class-action suit quickly is less risky and usually costs less than allowing the suit to proceed to trial. But quick settlements prompt more claims.

Rating agencies ask: Does the insurer promote cost-saving claims handling programs: back-to-work programs in workers' compensation, structured settlements in products liability, quicker claim payments in personal auto? What percentage of claims are litigated? How does the insurer's claims settlement practices compare with those of its peers?

Expense management: Well-managed insurers keep expenses reasonable; left unchecked, expenses rise quickly. Rating agencies examine if the insurer's expenses are higher or lower than average. Does the insurer monitor expenses in sufficient detail to identify and correct poor performance?

High expense ratios impair competitiveness and form a drag on earnings. Insurers with high expenses may lose business to more efficient competitors. By comparing the operating practices of peer companies, rating agencies try to identify inefficient insurers.

Current reinsurance arrangements vs reinsurance recoverables on past exposures

Rating agencies focus on the insurer's reinsurance arrangements vs its catastrophe and large loss exposures. After Hurricane Andrew in 1992, several Florida Homeowners insurers became insolvent because their direct losses exceeded the limits of cat covers.

Coverage: Rating agencies examine the insurer's current reinsurance program and recent changes in treaty limits, attachment points, and lines of business covered. They ask insurers for details of catastrophe covers

and corporate excess-of-loss treaties. Reinsurers are often excellent judges of a reinsured's financial strength, and their underwriting and pricing actions may signal potential risks. Higher attachment points or a greater coreinsurance percentage may indicate a reinsurer's concern that risk quality is poor. (It may also indicate the primary insurer's belief that less coverage is needed or the reinsurance is too expensive, so this Information must be examined carefully.) Changes in reinsurance pricing may reflect past results. Increasing reinsurance rates that do not match reinsurance underwriting cycles may indicate the reinsurer's belief that the reinsured is financially distressed. Reinsurers have better knowledge of the primary insurer's underwriting portfolio than the rating agencies has, so relying on reinsurers' pricing decisions is often useful.

Catastrophe modeling: To evaluate insurers with high property exposure in catastrophe-prone areas, rating agencies may compare the insurer's gross catastrophe modeling with its catastrophe covers. Catastrophe models generally provide the gross loss at various percentiles of the loss distribution, such as a 1 in 250 year event (the 99.6 percentile). An insurer may have a stated ERM goal of "no more than a 10% loss of surplus" except for a 1 in 250 year event. The rating agency would compare the attachment point and cover of the catastrophe treaty with the insurer's surplus and its modeling of catastrophes.

Risk transfer: Not all reinsurance transfers risk. Financial reinsurance, funds withheld treaties, and treaties with offshore reinsurers are potential warning signs to rating agencies. Some arrangements circumvent the strictures of statutory accounting; others hide solvency problems.

SECTION 5: RATING AGENCY CAPITAL REQUIREMENTS

Since the late 1990's, rating agencies have been publishing capital requirements for each rating. Insurers set policy prices, limit business expansion, avoid high-risk policies, sell blocks of business, or structure reinsurance to meet these capital requirements. Pricing actuaries once used premium to surplus or reserves to surplus leverage ratios for discounted cash flow (NPV and IRR) pricing models. Now they are more likely to use the required capital for their desired rating from Best's, S&P, Moody's, or Fitch.

Rating agency capital standards began as adaptations of the NAIC RBC requirements. The agencies modified the RBC formula to include other risks, such as interest rate risk, catastrophe risk, or asbestos and pollution loss reserves. They changed the RBC risk measure from the worst case year to value at risk, tail value at risk, or expected policyholder deficit. Moody's and Fitch use stochastic economic capital models.

Capital standards are salient differences among the rating agencies. The agencies all use data from Annual Statements, SEC filings, analyst meetings, and earnings reports, and they discuss similar management issues in their interactive meetings with insurers. But their capital formulas differ greatly, and they stress the accuracy and flexibility of their models to attract clients. Each rating agency chose a different means of competing for clients by producing a better capital adequacy formula.

Rating agencies examine quantitative measures of balance sheet strength and operating performance and qualitative analyses of management quality, operating strategy, competitive advantages, and ERM practices. Agencies say that qualitative items are important: how ERM is used to mitigate risks and whether competitive advantages are sustainable. But judging qualitative items is not easy. Insurers provide idyllic pictures of ERM practices and competitive strategy at interactive meetings, and agency evaluations are subjective.

Rating agencies strive for consistency: clients of similar financial strength should be rated similarly. Standard insurance financial ratios (quantitative data) do not capture qualitative items that affect long-term profitability, but a stress on qualitative issues may cause inconsistencies: the analyst for one insurer may give credit for some qualities that another analyst does not.[14] To ensure consistency, agencies relate ratings to economic capital measures and issue ratings by committees independent of the ratings analyst.

To be consistent, analysts' ratings should have the same meaning. If two analysts each recommend 30 "A-" ratings one year, the number of defaults should be similar. But an A- rating has a negligible default probability, so differences among analysts are hard to validate. Rating agencies therefore use quantitative measures to ensure consistency. Analysts should have similar capital ratios among their A- clients. Rating agencies publish the expected capital ratios for each rating, though qualitative factors influence the final rating. Analysts begin with the capital adequacy measure and adjust for management quality, ERM, and competitive advantages.

To succeed, rating agencies must distinguish weak vs strong insurers: identify stable insurers who are under-rated by other agencies (gaining clients who will pay for the rating) and identify weak insurers who are over-rated by other agencies (strengthening a reputation for accurate ratings). All agencies have the same data (accounting statements and presentations by clients), use similar methods (quantitative ratios of balance sheet strength and operating performance), and produce the same product. Ratings are easily understood by investors, but they are perhaps less accurate than a perfectly competitive market might provide.

The capital models of the four major agencies differ. A more accurate model helps an agency attract insurers who might be mis-rated by generic models. Inaccurate capital models may damage an agency's reputation or lower its market share. A rating agency with high capital standards and low ratings may lose clients. A rating agency with low standards and high ratings may lose investors' trust in its objectivity or financial expertise.

Best's adopted underwriting risk estimates, expected policyholder deficit risk measure, and interest rate risk from the American Academy of Actuaries task force on risk-based capital. By building on the work on casualty actuaries involved in RBC systems, it had the first sophisticated capital model among the rating agencies.

Moody's and Fitch developed stochastic capital models, since fixed formulas could not accurately assess the risks of most insurers. They used actuarial studies of risk variances and dependencies, aligning their models with papers of the CAS. But persuading clients that proprietary models estimate required capital is difficult.

Many insurers have their own economic capital models. The European Union Solvency II directives advocate principles-based RBC solvency monitoring, and Standard and Poor's proposes partial weight for internal company models. But assessing the quality of insurers' internal models has proved difficult.

This section focuses on the distinctive attributes of rating agency models:

- A. M. Best's use of the *expected policyholder deficit* to calibrate risk.
- Moody's and Fitch's use of *stochastic cash flows* to model economic capital.
- Standard and Poor's emphasis on *principles-based* models and ERM practices.

Best's Capital Adequacy Ratio

Best's BCAR (Best's Capital Adequacy Ratio) retains the RBC structure of independent risk categories with a covariance adjustment. RBC has six risk categories (fixed-income securities, equities, credit, reserves, written premium, and off-balance sheet risks). BCAR adds interest rate risk (which the NAIC did not include in its property-casualty formula) and risks not easily quantified from accounting statements: asbestos/pollution exposures and catastrophe risks.

The NAIC uses a worse case year measure to calibrate reserving and new business risks that is influenced by underwriting cycles in certain years: a different experience period gives different risk charges. The RBC charges are not consistent across risks. Asset risks reflect the pre-1990 MSVR (mandatory statutory valuation reserve) for life insurers, and credit risks are chosen subjectively. Instead of the worst case year and MSVR, BCAR uses an expected policyholder deficit (EPD) risk measure. BCAR uses a 1% EPD ratio for all sources of risk. In financial terms, the charge for each risk is the amount of capital such that the cost of a put option offsetting the risk is 1% of policyholder reserves. In conventional insurance terms:

- The *EPD* is the pure premium for unlimited aggregate excess-of-loss reinsurance.

- The *EPD ratio* is the EPD divided by the market value of held reserves.

Illustration: Insurer ABC's general liability reserves have a market value of $V, but they may develop adversely or favorably. ABC buys an aggregate excess-of-loss reinsurance treaty that pays the adverse development above $Z. The pure premium for the treaty is $P.

- The EPD ratio is $P / $V, and the required capital is $Z.
- As $Z (the attachment point) increases, the EPD and the EPD ratio decrease.
- Best's chooses $Z so that the EPD ratio is 1%.

The same 1% EPD ratio is used for all risks: capital losses on stocks, bond defaults, bond losses from interest rate movements, uncollectible reinsurance recoverables, reserve development, and new business losses. For each risk, the capital charge $Z is set so that aggregate excess-of-loss reinsurance covering losses above an attachment point $Z has a pure premium equal to 1% of reserves. The EPD depends on the volatility and size of the risk. For example, equities have more volatility than bonds, so they have a higher EPD and capital charge. But insurers hold less equities than bonds, so the marginal effect of equities on overall required capital may be less than that of bonds.

RBC looks at default risk on bonds and other fixed-income securities. Default risk on bonds held by P/C insurers (mostly Treasuries, investment grade corporate bonds, and municipal bonds) is slight. The major risk for insurers stems from interest rates rising above market expectations, leading to market value losses on fixed-income securities. Using average industry figures, Best's finds that a 120 basis point rise in interest rates gives a 1% EPD ratio. It stresses each insurer's asset portfolio with a 120 basis point interest rate rise.

RBC placed high weight on reserving risk, as befits a regulatory model. Regulators are most concerned that insurer pay their loss obligations to existing claimants. Distressed insurers often post deficient reserves. The NAIC viewed reserving risk as its highest priority.

BCAR uses an analysis of reserve volatility similar to one done by the American Academy of Actuaries in 1993-94 to estimate reserving risk and new business risk. Its analysis indicates that the RBC written premium risk charges should be raised relative to the reserving risk charges so that both have a 1% EPD.

Economic capital models can be bottom-up or top-down. A bottom-up approach determines capital charges for each risk and line of business and combines them with diversification factors. A top-down approach determines overall capital requirements from a multivariate distribution of all risks and allocates the required capital back to risk and line of business.

Best's uses loss distributions for each risk and line of business, giving separate capital charges by risk and line. To most accurately determine the required capital for the insurer, one should use a multivariate loss distribution for all risks and lines. Multivariate distributions of this sort are extremely difficult to gauge, so BCAR uses the covariance adjustment and the loss and premium concentration factors in the RBC formula. The net required capital for all risk categories combined is

$$\sqrt{(B_1)^2 + (B_2)^2 + (B_3)^2 + (B_4)^2 + (B_5)^2 + (B_6)^2} + (B_7)$$

B7 is off-balance sheet risks; B1-B6 are bond, equity, interest rate, credit, reserves, and new business risks.

The expected policyholder deficit procedure requires little capital for low volatility risks, and the square root rule further reduces the marginal capital of small risk categories. If equities and loss reserves are equally volatile, and equities are one tenth as large as loss reserves, the marginal effect of the equities capital charge is one tenth that of loss reserves.

Equities and loss reserves have the same absolute capital charge before the covariance adjustment, but loss reserves has ten times as great a marginal capital charge.

In the RBC formula, almost all marginal capital charges stem from reserving and written premium risks, with little capital stemming from fixed income and equities risks. Best's partly corrects this problem with higher asset risk charges, but overall capital is still heavily weighted toward underwriting risks.

The financial crisis of 2008-09 has led the rating agencies, including Best's, to reconsider the weighting of capital charges by risk. In particular, hurricanes, earthquakes, equities, and financial derivatives caused large losses for insurers since RBC was first implemented. Reserves for major lines have had little adverse development, but asbestos reserves have led to enormous losses. Reinsurance recoverables have not led to serious problems. The rating agencies re-estimate parameters of their capital models as new data emerge.

Stochastic cash flow capital models

Moody's and Fitch use stochastic cash flow models to assess capital requirements.

- The models form distributions of each risk and simulate repeatedly from them.
- Cash flows are projected until all current liabilities are settled.
- Required capital is set by a value at risk or tail value at risk measure.

The cash flow models provide full investment income offsets to full value loss reserves.

RBC, Best's, and Standard and Poor's use investment income offsets to reserving and written premium risks. The rating agencies use conservative discount rates and loss payment patterns to avoid over-stating the fair value of the insurer. RBC and Best's use 5% discount rates; Standard and Poor's uses a lower discount rate, based on current yields.

The fair value discount rates used by RBC, Best's, and Standard and Poor's range from 3% to 5%. They may be substantially less than the insurer's investment yield when interest rates are high. The stochastic models use the insurer's investment yield for the cash flow simulations.

Stochastic cash flow models examine the accumulated cash flows of assets vs insurance liabilities. Asset returns are based on interest rate generators and random walk simulations of equity returns. The interest rates and simulations are arbitrage free: that is, the mean return is the market forward rate, which is generally higher than current short term rates.

Illustration: The term structure of interest rates is 5% for one year, 6% for two years, and 7% for three years. These are risk-free spot rates: \$1 invested now yields \$1.05 in one year, $\$1 \times 1.06^2 = \$1.12$ in two years, and $\$1 \times 1.07^3 = \$1.23$ in three years. The implied interest rate from 2 to 3 years is \$1.23 / \$1.12 – 1 = 9%.

Cash flow simulation models are of two forms, depending on the treatment of negative cash balances at intermediate dates. The strict version requires the insurer to liquidate assets if no other cash is available. The more liberal version assumes the insurer borrows funds at short-term rates to satisfy sudden cash needs.

The rating agency stochastic models use either value at risk (VaR) or tail value at risk (TVaR) measures. A 99% VaR is the capital needed to remain solvent at the 99th percentile of the aggregate loss distribution. A 99% TVaR is the average capital needed to remain solvent in the 1% worst scenarios.

Illustration: A rating agency runs 50,000 simulations of an insurer's aggregate losses from all risk sources. It sorts the results from worst to best outcome. In the 500th worst outcome, the insurer loses \$250 million. The average of the 500 worst outcomes is a loss of \$600 million. The 99% value at risk is \$250 million, and the 99% tail value at risk is \$600 million.

Fitch and Moody's use interest rate generators to compute interest rate risk. Moody's uses 60,000 simulations, each of which has a path of short duration and long duration interest rates. As the insurer sells bonds to pay loss obligations, scenarios with rising rates show market value losses.

The simulations provide the asset liability management analyses once done by matching durations of bonds and loss reserves. The simulations are more informative, since they encompass movements of both short- and long-term interest rates, sector spreads, credit spreads, and loss cost trends. But the simulations are harder to evaluate or replicate. The interest rate risk charge depends on the mean reversion and volatility parameters in the interest rate generator. The stochastic model often seems like a black box to insurers.

Principles-based systems

Standard and Poor's chose not to form its own stochastic economic capital model. It has an accounting model based on the NAIC's RBC formula, but with no financial risk measure or covariance adjustment. It does not use actuarial or financial models for underwriting and asset risks, and it has no diversification adjustment or actuarial risk measure. Instead, it focused on evaluating insurers' enterprise risk management systems and internal capital models. It bases capital requirements on a weighted average of its own formula and the client's economic capital model.

Standard and Poor's reasons that well-managed insurers evaluate their capital needs more accurately than a rating agency can. Insurers examine distributions of reserve development using extensive data bases and sophisticated reserving methods. They can assess value at risk, tail value at risk, and expected policyholder deficit better than a rating agency can using public data.[15]

Appendix A: Financial Strength Ratings vs Bond Ratings

Credit quality and financial strength are continuous variables. Markets rate on continuous scales. For example, the spread of a corporate bond above Treasuries may be anywhere from 100 basis points to 300 basis points. In theory, insurers might be rated on a scale of 0 to 100. But people can not make such fine distinctions. It would be hard to distinguish a rating of 82 vs a rating of 83.

Instead, the rating agencies use letter scales (introduced by Fitch). The highest rating is A++ (or AAA) and the lowest rating is F, meaning the insurer is in liquidation. The scales of the major agencies are similar, though not identical. This section shows the scale used by A. M. Best's; the web sites of the other agencies show their letter grades.

Best's divides insurers between *secure* (likely to meet their insurance obligations) and *vulnerable* (may not meet their obligations in adverse scenarios). Secure insurers are grouped into three categories (*superior*, *excellent*, and *good*) with two levels in each. Vulnerable insurers are grouped into seven categories ranging from *fair* to *in liquidation* with ten levels (in total). The last entry, a suspended rating, might occur after a major event, such as a hurricane or earthquake, whose effects on the insurer are great but still uncertain.

Secure		*Vulnerable*	
Excellent	A++, A+	*Fair*	B, B-
Good	A, A-	*Marginal*	C++, C+
Fair	B++, B+	*Weak*	C, C-
		Poor	D
		Under Supervision	E
		In Liquidation	F

Rating Suspended	S

A. M. Best's issues also credit ratings: either investment grade or non-investment grade. A credit rating refers to the likelihood of payments on the debt securities. A short maturity bond backed by a mortgage on the insurer's property is likely to meet its coupon and principal payments, even if the insurer has a doubtful ability to pay long-term claims obligations.

Investment grade		*Non-Investment grade*	
Exceptional	aaa	*Speculative*	bb+, bb, bb-
Very strong	aa+, aa, aa-	*Very speculative*	b+, b, b-
Strong	a+, a, a-	*Extremely speculative*	ccc+, ccc, ccc-, cc, c
Adequate	bbb+, bbb, bbb-	*In default*	d

A. M. Best's also rates short-term debt, such as commercial paper, with a simpler set of letter grades.

Appendix B: History and Growth of the Rating Agencies

Credit ratings provide information to help investors determine whether issuers of debt will be able to meet their obligations. Rating agencies provide objective analyses and independent assessments of companies and countries that issue debt. Increasingly diverse debt securities and complex multi-national firms issuing them requires investors to understand the risks of many countries and asset types. Most creditors do not have the requisite expertise, and the influence of the major rating agencies has burgeoned.

The three major U.S. rating agencies began in the late 19th century to aid investors in corporate securities. Poor's *History of Railroads and Canals in the United States* (1860) first analyzed company financial strength. Standard Statistics, formed in 1906, published corporate bond, sovereign debt and municipal bond ratings. It merged with Poor's in 1941 and was acquired by McGraw-Hill in 1966. Standard and Poor's also produces stock indices such as the S&P 500, which are used for derivatives trading and as stock market indicators.

John Moody began publishing manuals providing statistics and information about stocks and bonds of various industries in 1900. Moody's Investors Service, begun in 1914, rated government bonds. By the 1970's Moody's was rating all corporate and sovereign debt. Fitch began in 1913 with stock and bond manuals of financial statistics. Fitch introduced the letter ratings of bonds now used by all agencies: AAA for highest grade through D for default. It merged with several competitors (IBCA, Duff & Phelps, Algorithmics) to form a diversified advisor for enterprise risk management and data services.

A. M. Best's was founded in 1899, issuing reports and financial strength ratings about life and property-casualty insurers. A. M. Best's rates 95% of insurers by premium volume.[16] It publishes voluminous reports each year assessing all life and property-casualty insurers. It has provided claims paying ratings since 1906 and credit ratings since 1999. Its monthly trade magazine, *Best's Review*, keeps it well known among insurance industry personnel. Its comprehensive surveys of insurers, monthly trade magazines with both articles and ratings, and low costs gave it a *de facto* monopoly on insurance ratings until the 1990's. Almost all insurers still take Best's ratings, though large insurers often have ratings from other agencies as well.

S&P, Moody's, and Fitch began as credit rating agencies; Best's began by rating insurers' overall financial strength (claims-paying ability). All rating agencies have since become full-service raters, though Best's still services only insurers and some other financial institutions, and the other agencies differ in their market shares by country and type of debt (corporate vs sovereign).

Before 1970, investors (not bond issuers) paid for publications of ratings agencies. But information spreads rapidly in efficient capital markets. Rating agencies realized that good ratings reduce the cost of debt and they could charge bond issuers for this value. Similarly, insurers pay for their own financial strength ratings.

In the 1970's, the Securities and Exchange Commission (SEC) imposed capital and liquidity requirements on securities owned by banks and other financial institutions. The major rating agencies were designated nationally-recognized statistical ratings organizations (NRSRO) by the SEC, and financial institutions could satisfy their capital requirements by investing in securities with favorable ratings by an NRSRO.

The advent of non-investment grade bonds in the late 1970's, the increase in sovereign debt since the early 1980's, requirements for ratings, and SEC approvals of the major agencies led to extraordinary growth of the rating agencies. In 1940-1970, only 0.1% of corporate debt defaulted. The debt was all investment grade and the U.S. economy grew steadily. Creditors did not require ratings to provide capital. By 2010, much corporate debt is below investment grade and world sovereign debt is enormous. Some countries (Argentina, Russia) and large firms have defaulted on their debt, and ratings are now essential to secure new loans.

Despite calls for reform of the rating agency market, both investors and debt issuers generally support the current structure. Debt has become an important part of corporate and sovereign activity, and rating agencies assess its quality.

The rating agency market has grown enormously over the past 30 years, for several reasons: High yield bonds have enabled even weaker firms to issue debt; government borrowing has increased enormously with little concern for repayment ability, leading to vast debt by poorly rated entities; more complex indentures require expert evaluation of bond risks. Fifty years ago, most new corporate debt was investment grade, and ratings were not essential. Now bond issues range from triple A to B-, and without a rating, the bond can not be sold. Fifty years ago, ratings were sought by publicly traded U.S. firms; European firms used bank loans, and they were evaluated by the banks. Now firms throughout the world issue debt. Sovereign entities, including weak states with no histories of debt repayment, finance budget deficits by publicly held debt. Ratings are essential for estimating default probabilities, since fiscal statements of some countries are not well-supervised.

Ratings are paid by firms being rated, not by investors using the rating, leading to potential conflicts of interest. A rating agency that downgrades its clients may lose their business. The failure of rating agencies to identify risks leading to the insolvency or government bailout of several banks and insurers are cited as evidence that they do not properly assess risk and financial strength. About 93% of AAA-rated subprime-mortgage-backed securities issued in 2006 fell below investment grade by 2010 (New York Times, April 25, 2010). The rating agencies received millions of dollars for these ratings from the issuing firms.

Despite the market growth, the same rating agencies have dominated the industry for the past century. The leading U.S. agencies rate firms and sovereign entities worldwide. Some people say more competition would reduce rating agency costs and lead to better risk assessments. The lack of product diversification and the ease of rating are conducive to a competitive market. But rating agencies may be natural monopolies, similar to municipal utilities of the mid-20th century. It is not clear that small agencies could survive in this market. Large agencies have strong reputations, helping them attract clients and forming powerful barriers to entry.

Potential conflicts of interest by rating agencies and the failure to foresee some insolvencies raise questions about the efficiency of rating agencies. Standard and Poor's, Moody's, and Fitch rate firms, states, and sovereign entities throughout the world.[17] Most large firms no longer operate in a single country, and non-insurance debt ratings entail analysis of global operations. The three U.S. agencies dominate the ratings market for multi-national firms.[18]

Entry into the rating agency market is hard. Ratings have little value unless they are widely accepted. A group of financial analysts might produce excellent ratings, but no client would pay to be rated until the agency is

established, giving established agencies strong advantages. Agencies' greatest asset are their reputations for accurate valuations and integrity. Firms already rated by Moody's and S&P don't want to pay for a third rating and don't want to give up either of their current ratings. New agencies with no reputations can not persuade investors that their ratings are accurate. Market leaders have remained since inception.[19]

Most corporate debt receives similar ratings from the agencies. The agencies' ratings are calibrated to the same levels: an A rating from S&P has similar meaning as an A rating from Moody's.[20] Rating agencies use the same data and provide similar services: public accounting statements and voluntary disclosures by their clients.[21] Ratings conform to market information: a client with a rising stock price will get a favorable rating from any agency. By law, rating agencies must disclose their ratings methods, as they now do on web sites. Academic studies find few differences in ratings techniques among the agencies. Innovations by one agency are copied by the others.

National regulation affects the rating agency market. The Basel II agreement allows banks to use ratings from approved rating agencies to calculate reserve requirements. The U.S. Securities and Exchange Commission permits investment banks to use credit ratings from Nationally Recognized Statistical Rating Organizations (NRSRO's) for creditworthiness regulations. Until 2007, Moody's, S&P, and Fitch were NRSRO's, along with three specialized agencies. Present law treats all rating agencies equally, but the three large agencies already dominate the market.

Appendix C: Efficiency and benefits of rating agencies

Until recently, rating agencies were seen as judges of credit worthiness whose analysis of bond issues or of firms' financial strength move markets. Some recent insolvencies of well-rated firms and some ratings down-grades on sovereign debt have led to public debate about the efficiency and benefits of rating agencies.

The 2002 Enron insolvency and the government bail-out of AIG in 2009 illustrate the different perspectives. Credit rating agencies do not always downgrade companies promptly. Enron had investment grade ratings until four days before it went bankrupt, though agencies may have known already of the company's problems.[22] In 2007, AIG was the largest commercial insurer in the world, with operations in scores of countries and over $100 billion of assets. It had triple A ratings from all agencies until it suddenly went bankrupt from excessive financial risk in 2008 and was bailed out by the U.S. government. Some people question whether agencies knew about the risks and failed to inform the public or were oblivious to billion dollar risks that destroyed firms.

Empirical studies indicate that bond yields rise as credit quality falls before the rating agencies downgrade the bonds. Markets composed of investors with no access to private firm information may be more efficient than agency analysts meeting with corporate management and reviewing proprietary documents. The value of credit ratings to investors and bondholders is unclear.[23]

Losses on subprime mortgages in 2007-08 highlight the doubts about rating agencies. In an April 2010 column in the New York Times, Paul Krugman pointed out that 93% subprime mortgage-backed securities rated triple A in 2006 fell below investment grade by 2010.[24]

Agencies rank risk; they do not guarantee solvency.

Hindsight ratings are easy and infallible. Insolvent insurers reveal inadequate reserves, speculative investment strategies, poor reinsurance arrangements, or weak underwriting standards. After each insolvency, one hears: *Why didn't the rating agencies uncover the problems?*

Insurers continually assume risks. They underwrite policyholders to screen out poor business and pool risks to quantify expected losses, but they do not eliminate the risks. Economic returns require firms to take risks: even well-managed insurers earning reasonable returns face significant risks.

Rating agencies base their evaluations on limited information. Insurers may not disclose proprietary data that might lower their ratings, unless they expect the data to become public. An A rating means that the probability of ruin is acceptably low, not that the insurer can not fail. A rating agency with no insolvencies among its A rated clients is performing well if it has the same likelihood of giving an A rating as other agencies. If it avoids A ratings for all but the most secure insurers, it is not providing useful information to users of the ratings.

Ratings corresponding to the relative risk of insurers. Rating agencies rank insurers by their probability of ruin; they do not vouch for an insurer's solidity. An A rating may mean a 1% chance of insolvency over the next three years, not a guarantee of solvency.

Rating analysts seek recommendations that match ultimate committee actions. An analyst who is consistently above or below the committee actions learns to adjust the recommendations to the committee's standards.

Rating agencies seek fair treatment of clients and strong reputations with investors.

Rating agencies have two objectives: impeccable reputations for assessing debt quality and financial strength, and equitable treatment of clients. When sovereign states are financially troubled, agencies are criticized in public forums whichever action they take. If they downgrade the country, they are criticized for contributing to its ills; if they don't downgrade the country, they are criticized for misleading the public. Financial ratings of insurers present the same dilemma: no ratings philosophy satisfies all critics.

Both extremes – no high ratings unless default is impossible and no downgrades unless default is certain – are poor business strategy. Giving high ratings only if the client is immune from risk doesn't serve investors, regulators, or the public.

Rating agencies hesitate to reduce ratings too quickly. An insurer may slip below its current rating because of serious operational problems, and the agency must re-assess the insurer before it slips further, or because of temporary problems, and the insurer may curtail its writings or reinsure parts of its portfolio. Sometimes the slippage reflects a new rating analyst or new members of the rating committee with different perspectives. A rating agency that downgrades insurers only to reverse the decisions later loses the goodwill of its clients, who may switch to competing agencies with more stable ratings. Slow ratings changes reflect business strategy, not poor assessments of risk.

Agencies use ratings outlooks and watch lists to avoid erroneous rating changes. A watch list means a rating change may soon occur, but the reasons are still vague. Agencies may place insurers on watch lists after large acquisitions; the rating may rise if greater market share leads to more profitable business and it may fall if the acquisition costs exceed the realized benefits. Outlooks reflect the agency's expectations. Ostensibly, a negative outlook means that trends in the insurer's operations or its environment may lead to a downgrade. In practice, a negative outlook may mean the insurer has fallen to a lower rating level, but the agency delays action for several months to verify the lower rating or to give the insurer time to correct the risks. An evaluation of ratings efficiency must consider outlooks, watches, and the potential harm of precipitous ratings changes.

Patterns of rating changes are examined by serial correlations. If agencies react promptly to new information, and downgrades occur as soon as the insurer falls below a given solvency threshold, then downgrades should be followed more often by upgrades than by a second downgrade. If rating agencies wait to issue downgrades until the insurer is well below a threshold, rating changes may be positively serially correlated.

Illustration: Agencies use sophisticated quantitative and qualitative scores that are weighted and mapped to letter ratings. For simplicity, suppose financial strength is ranked from 0 to 100, with 96-100 being AAA, 91-95 being AA, 86-90 being A, and so forth. Insurers move stochastically along the scale: an insurer rated 87 in 20X1 might be 85 or 89 in 20X2. If rating agencies downgraded insurers as soon as they crossed a threshold, then insurers downgraded from AA to A in 20X2 have ratings of 89 or 90. It is more likely that they rise above 90 in 20X3 than that they fall below 86. Letter rating changes should have negative serial correlations.

But if agencies do not downgrade insurers until they cross the mid-point of the rating level, an AA-rated insurer is not downgraded until it falls below 88. Insurers downgraded to A in 20X2 have average ratings of 86 or 87. It is more likely that they fall below 86 in 20X3 than that they rise above 90. Letter rating changes should have positive serial correlations. In some cases, the agency gives the insurer a negative outlook without changing the letter rating. An insurer that has dropped to 87 or 88 may retain its AA rating with a negative outlook. In contrast, capital markets (bonds for debt ratings; common stock for financial strength ratings) respond rapidly to new information.

Observed serial correlations are positive, indicating that the agencies change ratings only when the upgrade or downgrade is certain, long after bond markets change credit spreads. Good business practice explains the lag: agencies want to avoid excessive rating changes for firms on the boundary between rating categories.

Agencies' lack of proprietary data is another reason for their slow response. Markets respond to hunches and gut feelings. If investors even suspect that a firm has problems, it stock price drops and its debt yield rises. Agencies can not act without supporting evidence. The AIG case shows this clearly. Even senior managers did not know the magnitude of the risks. AIG is a highly secretive firm, and rating agencies knew no more than other outsiders. Agencies rely on the integrity of their clients: they are analysts assessing risks, not detectives.

APPENDIX D: RATING AGENCIES EXERCISES

The exercises below may help students understand the reading. However, these exercises are not necessarily representative of possible exam questions.

Exercise 1.1: Insurer XYZ writes Homeowners coverage. Insurer ABC writes life annuities funding structured settlements for accident victims, many of whom are minors. A judge has ruled that an insurer needs an A rating from a nationally recognized rating agency to fund structured settlements.

A. Why are ratings important for Homeowners insurers?
B. Why are ratings important for writers of life annuities funding structured settlements?
C. For which insurer is operating performance most important and for which is balance sheet strength most important?

Part A: Banks providing mortgages generally require Homeowners on the property. Sometimes the bank is the payee if the home is destroyed by a covered peril, up to the amount of the remaining mortgage. If the insurer is insolvent, the insurance protection does not safeguard the bank. A hurricane or other catastrophe may bankrupt a weakly capitalized insurer, so banks may require coverage by a well-rated insurer.

Part B: A minor receiving a structured settlement receives payments by the insurer for many years (perhaps a lifetime), but does not choose the insurer funding the structured settlement. A weakly capitalized insurer may become insolvent during the term of the structured settlement, which may extend for the life of the minor. A high rating safeguards the interests of the minor.

Part C: Balance sheet strength is more important for the Homeowners insurer. The bank is concerned that the insurer can indemnify the homeowner for the damage this year, not that the insurer will stay around for many further years. Operating performance is more important for the writer of life annuities funding structured settlements, since the insurer must stay around for many years.

Exercise 1.2: The ratings meeting is like a poker game at which neither side exposes its cards.

A. Why does the rating agency not disclose its impressions from publicly available data?
B. Why might the insurer's failure to disclose adverse information lead to a downgrade?
C. How does the ratings process affect the insurer's decision about what data to disclose?

Part A: The rating agency wants the insurer to believe it has better information than it actually has. Publicly available data are sparse; the rating agency often lacks information about critical parts of the insurer, such as its asbestos and environmental exposures. By not disclosing what data they already have, rating agencies force insurers to supply proprietary data for all parts of the company.

Part B: Management integrity is an important rating criterion. Rating agencies rely on proprietary data supplied by insurers. If the insurer is dishonest on one topic, the agency fears it is dishonest on others, and it may lower the rating.

Part C: The lead analyst gives a ratings proposal in a presentation to the ratings committee, supported by the data received from the insurer. The insurer has no opportunity to provide more data to the ratings committee, so it makes sure the lead analyst has all the data that might be requested by the committee.

Exercise 1.3: An insurer has a 2:1 premium to surplus ratio and 4:1 reserves to surplus ratio. How do each of the following affect a rating agency's view of the leverage ratios? For each item, explain why a rating agency might look favorably or unfavorably on the asset or liability. Specifically, how does the asset or liability affect the insurer's claims paying ability in adverse scenarios?

A. Goodwill from a recent acquisition.
B. Deferred tax assets.
C. Surplus relief from quota share reinsurance.
D. Holding company debt that appears as equity in the insurer's Annual Statement.
E. Catastrophe bonds.

Part A: Goodwill is an asset on both statutory and GAAP balance sheets, reflecting the excess of the price paid for a subsidiary over its book value. Many acquisitions do not provide returns that justify their costs. (Half to two thirds of acquisitions turn out to have negative net present values.) Rating agencies view acquisitions critically: unless the promised benefits are likely to be realized, a large acquisition may lead to a negative outlook for the insurer. Goodwill may be excluded from surplus to evaluate the leverage ratios.

Part B: Deferred tax assets assume a going-concern with future taxable income that can be offset. Adverse scenarios leading to financial distress often eliminate taxable income, reducing the value of the deferred tax assets. Rating agencies may give little value to DTAs. The deferred tax asset may be excluded from surplus to evaluate the leverage ratios.

Part C: NAIC financial exams and IRIS tests may not give full value to surplus relief. Surplus relief offsets the surplus strain in statutory accounting. GAAP and fair value accounting do not penalize insurers for surplus strain. Rating agencies consider economic values of insurers, not just statutory values, so they have no reason to exclude surplus relief when computing leverage ratios.

Part D: Holding company debt appears as equity on the insurer's books, but it is a fixed charge paid from the insurer's income. Rating agencies evaluate the full debt of the insurer, whether it is issued through a holding company or an affiliate. Rating agencies may compute leverage ratios to equity only.

Part E: Catastrophe bonds can offset major losses. The potential value of the bond is an off-balance sheet asset. Rating agencies may add part of the bond payment to surplus when evaluating leverage ratios for catastrophes.

Exercise 1.4: Rating agency XYZ gives 40% of its client A- ratings or better, and their probability of ruin over the next five years is 4%. Rating agency ABC give A- ratings or better to 20% of its clients, who have a 2% probability of ruin over the next five years.

A. Is ABC better or worse at rating insurers than XYZ?
B. What is a possible effect of ABC's rating philosophy on its market share?

Part A: Neither rating agency is better or worse at rating. The quality of a rating depends on its consistency. The ratings given by different analysts on the same agency should be the same, but different agencies often have different meanings for a rating.

Part B: ABC gives fewer high ratings. Insurers who would receive an A- rating from XYZ and a lower rating from ABC are likely to choose XYZ. As a result, agencies tend to have similar ratings. But the ratings are not identical; some agencies give consistently higher or lower ratings than others.

Exercise 1.5: Firms in other industries seek ratings if they issue debt or are publicly traded. Most insurers have no debt and are not publicly traded, yet almost all insurers are rated. Many insurers have ratings from two or more agencies, despite the high cost of ratings.

A. Why are ratings so prevalent in the insurance industry?
B. Which insurers most need ratings?

Part A: Other firms sell products or services. Consumer can evaluate the products in stores and read reviews by previous buyers on internet web sites or consumer magazines. Insurers sell promises, whose worth is not known for many years. Most consumers can not themselves evaluate insurers; even insurance agents and banks providing mortgages can not always identify high risk insurers.

Part B: Insurers providing coverage that benefit third parties, such as banks providing mortgages, suretieswho guarantee completion of a construction project, or writers of life annuities supporting structured settlements, pay for ratings to assure others that they can fulfill their promises. Sophisticated consumers (large commercial policyholders and primary insurers for reinsurance) also seek insurers with good ratings.

Exercise 1.6: Tens of thousands of firms throughout the world need ratings each year. Most of these firms are rated by one of the three major U.S. rating agencies.

A. Why is the ratings industry dominated by three firms?
B. Why might three firms (instead of 30) create a more efficient ratings process?

Exercise 1.7: Whether ratings affect bond yields or bond yield changes precede rating changes is unclear.

A. Why might one presume that ratings affect bond yields?
B. Why might one presume that bond yield changes precede rating changes?

Exercise 1.8: The ratings process

A. What are the roles of the ratings analyst and the ratings committee?
B. What information does the rating agency seek to obtain from interactive meetings?

Exercise 1.9: ABC, an East Coast reinsurer, is preparing an offer to acquire XYZ, a West Coast reinsurer. It expects costs savings from the acquisition, and it offers a substantial premium over XYZ's market price.

A. How might a rating agency view the acquisition?
B. What qualitative items might the rating agency be most concerned about?
C. Why might ABC discuss the acquisition with its rating agencies beforehand?

Exercise 1.10: Rating agencies seek performance measures that are consistent among insurers. You are choosing between pre-tax and after-tax earnings as the measure of operating performance.

A. Why might pre-tax earnings be more consistent among insurers?
B. Why might after-tax earnings be more consistent among insurers?

C. How might one adjust pre-tax earnings to make them more consistent?
D. How might one adjust after-tax earnings to make them more consistent?

Exercise 1.11: Quality of earnings

A. What is meant by quality of earnings?
B. What attributes affect quality of earnings?

Exercise 1.12: ABC writes personal auto in 20 U.S. states. XYZ writes property excess-of-loss treaties for catastrophe risks of windstorms and earth movement. Both insurers have a 6% return on sales.

A. Which insurer has the higher return on capital?
B. How might the quality of earnings differ for these two insurers?

Exercise 1.13: A personal auto insurer targets retirement communities in the U.S. sun-belt. Many of its insureds are wealthy, but they drive less after moving to these communities. It is well-capitalized, with a 60% loss ratio, a 90% persistency rate, and a return on surplus over 20% for the past five years. Rating agencies have kept the insurer at a B+ rating, citing risks of a single line of business subject to underwriting cycles and a small niche market that may be threatened by peers. The insurer is seeking to diversify. Explain the costs and benefits of each of the following.

A. Expand into Homeowners coverage, with a package policy for personal auto insureds.
B. Expand into standard and sub-standard auto risks, with discounts for children of current policyholders.
C. Expand into Medicare supplement policies for residents of the retirement communities.
D. Expand into medical malpractice coverage for physicians serving the retirement communities.

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Enterprise risk management

S&P: Principles of corporate ratings
Analysis of non-life insurance operating performance
Assessing loss reserves
Evaluating insurers' competitive position
Financial flexibility and capital structure
Interactive ratings methodology
Analysis of insurer capital adequacy

Moody's: Capital adequacy
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ENDNOTES

[1] Corporate charters of some pension funds and similar institutional investors specify investments in bonds rated *investment grade* (BBB) or higher. Non-investment grade bonds (rated BB or lower) have higher default-adjusted yields (= the yield net of expected losses from defaults), indicating lower demand for these bonds..

[2] Plaintiffs’ attorneys often demand an A- or higher rating for the insurer providing the annuity that funds the structured settlement.

[3] The predictive accuracy of ratings is less relevant than their acceptance by investors. Even if an agency’s decision is contested by other analysts, the agency’s decision retains its effect on coupon rates if bondholders respect the decision.

[4] Insurers’ indirect costs to secure high ratings include reinsurance to transfer risks, non-renewal of policies to reduce business volume, and internal ERM models to demonstrate a commitment to effective risk management. An insurer may cede a large portion of its property writings to reduce catastrophe risk in rating agency capital models, giving up expected profits for a higher rating. Some critics suggest that rating agencies hint of potential downgrades to induce insurers to pay for interactive ratings. For example, an insurer with A- ratings from two agencies may pay for interactive ratings from only one. The other agency informs the insurer that it may reduce its rating to B+, but that evidence of good corporate governance would keep the A- rating. The insurer may pay for an interactive rating to demonstrate its corporate governance and keep its A- rating.

[5] See Koresh [2003], Kliger and Sarig [2000], Langohr and Langohr [2009], and Levich, Majnoni, and Reinhart [2002].

[6] Critiques of rating agency activities are reviewed later in this reading.

[7] Firms in other industries can keep their finances private; insurers provide extensive public information in statutory Annual Statements. Most insurers find it more efficient to pay for interactive ratings, with a chance to influence agency decisions, than to risk a public rating.

[8] Insurers may choose initially not to be rated by a particular agency, but they rarely cease being rated by the agency for fear of a downgrade in a public rating.

[9] Analysts for insurance company ratings may work entirely with insurers, so they have enough experience to assess their clients’ qualities.

[10] State regressions examine the financial condition of all licensed insurers every three to five years. These financial examinations are more expensive and intrusive than rating agency valuations, and insurers seek to minimize the cost. Whereas a rating agency sees only data voluntarily provided by the client, state regulators often request records that the insurer might not wish to expose. Rating agencies spend two or three weeks analyzing the client; a state financial examination lasts months. State regulators do not require a commercial rating, but an unrated insurer may receive a more thorough exam.

[11] The importance of commercial ratings is clear from advertisements in trade publications. Both insurers and reinsurer emphasize their ratings in ads geared to agents or primary insurers.

[12] Actuaries once used models to evaluate the financial strength of reinsurers. But the effort and expertise needed to build the models, and the uncertainty in models based on public information alone, cause most primary insurers to rely on the commercial ratings.

[13] Most insurers that did not renew Scor Re treaties probably based their decisions on the rating downgrade.

[14] Agencies are sensitive to criticisms that ratings are influenced by the desire tor retain profitable clients.

[15] The impetus for principles-based solvency monitoring systems stems from the European Union's Solvency II directives, which the NAIC is now also evaluating. Standard and Poor's presumes that insurers will develop economic capital models to satisfy the new regulatory regimes, and they can assess an insurer's financial strength from its ERM models.

[16] The remaining 5% are mostly small or young insurers who do not meet Best's size or age criteria.

[17] S&P and Moody's have 80% of the U.S. rating agency market; together with Fitch, they have about 90%.

[18] Other rating agencies operate in foreign countries. Many foreign insurers operating in a single country are rated by country specific rating agencies.

[19] Suppose an insurer is rated A- by S&P and Best's. A new agency approaches the insurer offering a more sophisticated rating system. If the new agency gives more favorable ratings, it won't affect investors and agents who rely on the rating agencies they are familiar with. If the new agency gives less favorable ratings, it won't attract clients. The rating agency industry may already be saturated.

[20] Insurance ratings by A. M. Best's are somewhat higher (on average) than those from the other agencies, but the differences are slight.

[21] Rating agencies do little proprietary financial research. It is less expensive to use published research by leading academics than to hire private researchers. The best analysts prefer work at universities where they publish freely than at private firms that own all their work.

[22] See Amy Borrus, "The Credit-Raters: How They Work and How They Might Work Better," *Business Week*, April 8, 2002, and Edward Wyatt, "Credit Agencies Waited Months to Voice Doubt About Enron," Georgetown University, February 8, 2002).

[23] D. Kliger and O. Sarig (2000), The Information Value of Bond Ratings, *Journal of Finance*, December: 2879-2902; Koresh Galil (2003). The quality of corporate credit rating: An empirical investigation. *EFMA* 2003 Helsinki Meetings. European Financial Management Association.

[24] Krugman infers that rating agencies are corrupt. He infers that the agencies began as market researchers, selling assessments of corporate debt to investors. Eventually they morphed into something quite different: companies that were hired by the people selling debt to give that debt a seal of approval. Few economists agree with this analysis; this reading presents the interpretations without supporting any of them.

Financial Services Commission of Ontario, "Private Passenger Automobile Filing Guidelines–Major," October 2016, pp. 1-5 (excluding filing format), 11-21 (starting from Section 3), and Appendix B2.

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- http://www.fsco.gov.on.ca/en/auto/filing-guidelines/Documents/PPA-major.pdf

Français

Insurance Act

R.R.O. 1990, REGULATION 664
AUTOMOBILE INSURANCE

Consolidation Period: From July 4, 2016 to the e-Laws currency date.

Last amendment: 252/16.

Legislative History: 780/93, 823/93, 850/93, 553/94, 399/96, 464/96, 530/96, 301/98, 113/00, 483/01, 391/02, 275/03, 459/03, 210/04, 46/05, 316/05, 548/05, 62/08, 36/10, 291/10, 222/15, 250/15, 43/16, 252/16.

This is the English version of a bilingual regulation.

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Definitions

1. In this Regulation,

"commercial vehicle" means an automobile used primarily to transport materials, goods, tools or equipment in connection with the insured's occupation, and includes a police department vehicle, a fire department vehicle, a driver training vehicle, a vehicle designed specifically for construction or maintenance purposes, a vehicle rented for thirty days or less, or a trailer intended for use with a commercial; ("véhicule utilitaire")

"fleet" means a group of not fewer than five automobiles that meets the following requirements:

1. At least five of the automobiles in the group are commercial vehicles, public vehicles or vehicles used for business purposes.
2. The automobiles in the group are,
   i. under common ownership or management, and any automobiles in the group that are subject to a lease agreement for a period in excess of 30 days are leased to the same insured person, or
   ii. available for hire through a common online-enabled application or system for the pre-arrangement of transportation, and insured under a contract of automobile insurance in which the automobile owner or lessee, as the case may be, has coverage as an insured named in the contract; ("parc automobile")

"public vehicle" means an automobile used primarily to provide transportation services to the public, and includes an ambulance, bus, funeral vehicle, limousine or taxi. ("véhicule public") O. Reg. 780/93, s. 2; O. Reg. 275/03, s. 1; O. Reg. 43/16, s. 1; O. Reg. 252/16, s. 1.

2. Revoked: O. Reg. 391/02, s. 1.

MONTHLY PREMIUM PAYMENTS (SECTION 234 OF THE ACT)

3. (1) This section applies with respect to statutory condition 3 as set out in the Schedule to Ontario Regulation 777/93. O. Reg. 780/93, s. 3 (1).

(2) An insurer is not required to permit an insured to pay the premium in instalments unless all of the following conditions are met:

1. The insurer, together with its affiliates, insured at least 10,000 private passenger automobiles in Ontario during the previous year.
2. The contract is written on Ontario Automobile Policy 1 or Ontario Policy Form 2.
3. The contract does not insure a commercial vehicle or public vehicle.
4. The contract does not insure five or more vehicles that are under common ownership or management.
5. The total annual premium payable under the contract exceeds $300.
6. The insured has not had more than one automobile insurance policy terminated by an insurer for non-payment of the premium during the thirty-six months before the contract takes effect. O. Reg. 780/93, s. 3 (1); O. Reg. 464/96, s. 2.

(3) REVOKED: O. Reg. 780/93, s. 3 (1).

(4) As a precondition for permitting an insured to pay the premium in instalments, an insurer may require that the insured,

(a) make an initial payment equal to two monthly instalments of the premium; and

(b) agree to make all payments under the contract by pre-authorized payment from the insured's account at a financial institution. R.R.O. 1990, Reg. 664, s. 3 (4).

(5) REVOKED: O. Reg. 250/15, s. 1 (1).

(5.1) The maximum interest rate that an insurer may charge for instalment payments in respect of a contract entered into or renewed before June 1, 2016 is,

(a) 3 per cent of the total premium payable under the contract, if the term of the contract is twelve months or more;

(b) 1.5 per cent of the total premium payable under the contract, if the term of the contract is six months or more but less than twelve months; and

(c) 0.5 per cent of the total premium payable under the contract, if the term of the contract is less than six months. O. Reg. 780/93, s. 3 (3); O. Reg. 250/15, s. 1 (2).

(5.2) The maximum interest rate that an insurer may charge for instalment payments in respect of a contract entered into or renewed on or after June 1, 2016 is,

(a) 1.3 per cent of the total premium payable under the contract, if the term of the contract is twelve months or more;

(b) 0.65 per cent of the total premium payable under the contract, if the term of the contract is six months or more but less than twelve months; and

(c) 0.22 per cent of the total premium payable under the contract, if the term of the contract is less than six months. O. Reg. 250/15, s. 1 (3).

(6) The amount of each instalment payment shall be calculated as blended principal and interest.

(7) An insurer who is not required to permit its insureds to pay their premiums in instalments but who chooses to do so is subject to the same requirements as those insurers who are required to permit their insureds to pay their premiums in instalments. R.R.O. 1990, Reg. 664, s. 3 (6, 7).

EXEMPTION FROM NOTICE (SECTION 236 OF THE ACT)

4. Insurers are exempt from the requirements of section 236 of the Act with respect to every contract of automobile insurance that insures a fleet. O. Reg. 275/03, s. 2.

REFUSAL TO ISSUE CONTRACTS (SECTION 237 OF THE ACT)

5. (1) No insurer shall decline to issue, refuse to renew or terminate any contract of automobile insurance or refuse to provide or continue any coverage or endorsement solely because,

(a) the applicant or another person who would be an insured person under the contract is or was insured by the Facility Association; or

(b) another insurer declined to issue or renew another contract of automobile insurance for the applicant or another person who would be an insured person under the contract. R.R.O. 1990, Reg. 664, s. 5 (1).

(2) In deciding whether to issue, renew or terminate any contract of automobile insurance or to provide or continue any coverage or endorsement, the insurer shall not consider,

(a) the existence of a physical or mental disability affecting a person who would be an insured person under the contract;

(b) the number of persons who would become insured persons under the contract or their state of health or life expectancy;

(c) the occupation, profession or employment circumstances of any person who would be an insured person under the contract;

(d) the level of income of any person who would be an insured person under the contract;

(d.1) the employment history of a person who would be an insured person under the contract;

(d.2) the fact whether a person who would be an insured person under the contract has a credit card;

(d.3) the credit history of a person who would be an insured person under the contract;

(d.4) the credit rating of a person who would be an insured person under the contract;

(d.5) the fact whether a person who would be an insured person under the contract is bankrupt or has a history of bankruptcy;

(d.6) the residence history of a person who would be an insured person under the contract;

(d.7) the fact whether a person who would be an insured person under the contract owns a home;

(d.8) the gross or net worth of a person who would be an insured person under the contract;

(d.9) the indebtedness of a person who would be an insured person under the contract;

(d.10) the fact whether a person who would be an insured person under the contract has made premium payments that were late or dishonoured in respect of a contract of automobile insurance that was not terminated by reason of the late or dishonoured payments;

(e) the existence or non-existence of a medical, surgical, dental or hospitalization plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for services and treatment that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule*;

(f) the existence or non-existence of an income continuation benefit plan, a sick leave plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for benefits that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule*;

(g) a request by the applicant to purchase any optional benefit established under paragraph 10 of subsection 121 (1) of the Act;

(h) any past claim under Schedule C of the Act or under the *Statutory Accident Benefits Schedule* arising out of an incident for which a person who would be an insured person under the contract was not at fault; or

(i) any past claim under section 263 of the Act for loss or damage, arising directly or indirectly from the use or operation of an automobile, for which a person who would be an insured person under the contract was not at fault. R.R.O. 1990, Reg. 664, s. 5 (2); O. Reg. 780/93, ss. 1, 4; O. Reg. 46/05, s. 1.

(2.1) Subject to subsection (2.2), for the Personal Vehicles — Private Passenger Automobiles category of automobile insurance, in deciding whether to issue, renew or terminate any contract of automobile insurance or to provide or continue any coverage or endorsement, the insurer shall not consider a minor accident that occurred on or after June 1, 2016. O. Reg. 250/15, s. 2 (1).

(2.2) An insurer may consider a minor accident that occurred on or after June 1, 2016 if, within the previous three years, any automobiles that were or would be covered by the contract of automobile insurance were involved in a total of more than one minor accident and, in any of those accidents, the driver of that automobile was at fault. O. Reg. 250/15, s. 2 (1).

(2.3) For the purposes of subsections (2.1) and (2.2), an accident is a minor accident if all of the following circumstances exist:

1. The cost of damage to each automobile, including any associated property damage, did not exceed $2,000 and the cost of all such damages was paid by or on behalf of the driver who was at fault.

2. No personal injuries were sustained as a result of the accident.

3. No payment was made by any insurer with respect to damage to any automobile or property resulting from the accident. O. Reg. 250/15, s. 2 (1).

(3) In deciding whether to issue, renew or terminate a contract providing only third party liability coverage in any amount and the benefits and coverages described in subsection 265 (1) (uninsured automobile coverage) and section 268 (statutory accident benefits) of the Act, the insurer shall not consider whether a person who would be an insured person under the contract has made any past claim for loss or damage to an automobile, including its equipment, caused by any peril other than collision or upset. R.R.O. 1990, Reg. 664, s. 5 (3); O. Reg. 780/93, s. 1.

(4) An insurer shall not terminate a contract of automobile insurance because,

(a) a group marketing plan within the meaning of section 17 terminates; or

(b) the insured ceases to be a member of a group referred to in clause 16 (5) (a) or (b). O. Reg. 553/94, s. 1.

ADDED COVERAGE TO OFFSET TORT DEDUCTIBLES ENDORSEMENT

5.1 (1) If requested by an insured in respect of a contract of automobile insurance, the insurer shall offer the "Added Coverage to Offset Tort Deductibles" endorsement, as approved by the Superintendent under section 227 of the Act. O. Reg. 36/10, s. 1.

(2) Benefits provided by the endorsement referred to in subsection (1) are deemed not to be statutory accident benefits for the purpose of Part VI of the Act. O. Reg. 36/10, s. 1.

DIRECT COMPENSATION — PROPERTY DAMAGE (CLAUSE 263 (5) (B) OF THE ACT)

6. (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile that is in the care, custody or control of a person who is engaged in the business of selling, repairing, maintaining, servicing, storing or parking automobiles is entitled to indemnification from the person.

(2) The amount of the indemnity is limited to that proportion of the loss that is attributable to the fault, as determined under the fault determination rules, of the person or of an employee or agent of the person. R.R.O. 1990, Reg. 664, s. 6.

7. (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile that is being towed by another automobile is entitled to indemnification from the lessee or, if there is no lessee, from the owner of the automobile towing it,

(a) if the lessee or owner, as the case may be, is engaged in the business of towing automobiles; or

(b) if the automobile towing the insured automobile has a gross vehicle weight greater than 4,500 kilograms.

(2) The amount of the indemnity is limited to that proportion of the loss that is attributable to the fault, as determined under the fault determination rules, of the driver of the automobile that is towing the insured automobile. R.R.O. 1990, Reg. 664, s. 7.

8. (1) For the purpose of clause 263 (5) (b) of the Act, the insurer of an automobile the contents of which suffer damage in an amount greater than $20,000 is entitled to indemnification from the insurer of the other automobile involved in the incident.

(2) The amount of the indemnity is limited to that proportion of the loss over $20,000 that is attributable to the fault, as determined under the fault determination rules, of the driver of the other automobile. R.R.O. 1990, Reg. 664, s. 8.

8.1 The following classes of contracts are prescribed for the purpose of subsection 263 (5.1) of the Act:

1. Contracts written on Ontario Automobile Policy 1.

2. Contracts written on Ontario Policy Form 4. O. Reg. 399/96, s. 1.

INDEMNIFICATION FOR STATUTORY ACCIDENT BENEFITS (SECTION 275 OF THE ACT)

9. (1) In this section,

"first party insurer" means the insurer responsible under subsection 268 (2) of the Act for the payment of statutory accident benefits; ("assureur de première part")

"heavy commercial vehicle" means a commercial vehicle with a gross vehicle weight greater than 4,500 kilograms; ("véhicule utilitaire lourd")

"motorcycle" means a self-propelled vehicle with a seat or saddle for the use of the driver, steered by handlebars and designed to travel on not more than three wheels in contact with the ground, and includes a motor scooter and a motor assisted bicycle as defined in the *Highway Traffic Act*; ("motocyclette")

"motorized snow vehicle" means a motorized snow vehicle as defined in the *Motorized Snow Vehicles Act*; ("motoneige")

"off-road vehicle" means an off-road vehicle as defined in the *Off-Road Vehicles Act*; ("véhicule tout terrain")

"second party insurer" means an insurer required under section 275 of the Act to indemnify the first party insurer. ("assureur de deuxième part") R.R.O. 1990, Reg. 664, s. 9 (1); O. Reg. 780/93, ss. 1, 6.

(2) A second party insurer under a policy insuring any class of automobile other than motorcycles, off-road vehicles and motorized snow vehicles is obligated under section 275 of the Act to indemnify a first party insurer,

(a) if the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a motorcycle and,

(i) if the motorcycle was involved in the incident out of which the responsibility to pay statutory accident benefits arises, or

(ii) if motorcycles and motorized snow vehicles are the only types of vehicle insured under the policy; or

(b) if the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a motorized snow vehicle and,

(i) if the motorized snow vehicle was involved in the incident out of which the responsibility to pay statutory accident benefits arises, or

(ii) if motorcycles and motorized snow vehicles are the only types of vehicle insured under the policy. R.R.O. 1990, Reg. 664, s. 9 (2); O. Reg. 780/93, s. 1.

(3) A second party insurer under a policy insuring a heavy commercial vehicle is obligated under section 275 of the Act to indemnify a first party insurer unless the person receiving statutory accident benefits from the first party insurer is claiming them under a policy insuring a heavy commercial vehicle. R.R.O. 1990, Reg. 664, s. 9 (3); O. Reg. 780/93, s. 1.

SETTLEMENTS — STATUTORY ACCIDENT BENEFITS

9.1 (1) In this section,

"settlement" means an agreement between an insurer and an insured person that finally disposes of a claim or dispute in respect of the insured person's entitlement to one or more benefits under the *Statutory Accident Benefits Schedule*. O. Reg. 780/93, s. 7.

(2) The insurer shall give the insured person a written disclosure notice, signed by the insurer, with respect to the settlement. O. Reg. 483/01, s. 1.

(3) The disclosure notice shall be in a form approved by the Superintendent and shall contain the following information:

1. The insurer's offer with respect to the settlement.

2. A description of the benefits that may be available to the insured person under the *Statutory Accident Benefits Schedule*.

3. A statement that the insured person may, within two business days after the later of the day the insured person signs the disclosure notice and the day the insured person signs the release, rescind the settlement by delivering a written notice to the office of the insurer or its representative and returning any money received by the insured person as consideration for the settlement.

4. A description of the consequences of the settlement on the benefits described under paragraph 2 including,

   i. a statement of the restrictions contained in the settlement on the insured person's right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal,

   ii. a statement that the tax implications of the settlement may be different from the tax implications of the benefits described under paragraph 2 and.

   iii. a statement that the insured person may not apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act with respect to benefits that were the subject of a settlement or a purported settlement unless the insured person has returned the money received as consideration for the settlement.

5. A statement advising the insured person to consider seeking independent legal, financial and medical advice before entering into the settlement.

6. A statement for signature by the insured person acknowledging that he or she has read the disclosure notice and considered seeking independent legal, financial and medical advice before entering into the settlement. O. Reg. 483/01, s. 1; O. Reg. 43/16, s. 2 (1, 2).

(4) The insured person may rescind the settlement within two business days after the later of the day the insured person signs the disclosure notice and the day the insured person signs the release. O. Reg. 483/01, s. 1.

(5) The insured person may rescind the settlement after the period referred to in subsection (4) if the insurer has not complied with subsections (2) and (3). O. Reg. 483/01, s. 1.

(6) Subsections (4) and (5) do not apply with respect to a settlement that has been approved by a court under Rule 7 of the Rules of Civil Procedure (Parties under Disability). O. Reg. 483/01, s. 1.

(7) The insured person shall rescind a settlement under subsection (4) or (5) by delivering a written notice to the office of the insurer or its representative and returning any money received by the insured person as consideration for the settlement. O. Reg. 483/01, s. 1.

(8) No person may apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act with respect to benefits that were the subject of a settlement or a purported settlement unless the person has returned the money received as consideration for the settlement. O. Reg. 483/01, s. 1; O. Reg. 43/16, s. 2 (3).

(9) If the insured person returns money to the insurer under subsection (7) or (8) and a dispute arises between the insurer and the insured person with respect to the validity of the purported settlement or the right of the insured person to rescind the settlement, the insurer shall hold the money in trust until the matter is determined, at which time the amount and any income on the amount,

(a) shall be paid to the insured, if it is determined or agreed that there was a valid settlement that was not rescinded; and

(b) shall be returned to the insurer, if it is determined or agreed that there was no settlement, or that the settlement was invalid or was rescinded. O. Reg. 483/01, s. 1.

(10) A restriction in a settlement on an insured person's right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal is void unless the insurer complied with subsections (2) and (3) and one of the following conditions is satisfied:

1. The settlement is entered into on or after the first anniversary of the day of the accident that gave rise to the claim.
2. Before entering into the settlement,
   i. the insured applied to the Licence Appeal Tribunal under subsection 280 (2) of the Act, and
   ii. if there were applicable rules or procedures of the Licence Appeal Tribunal in respect of case conferences at the time of the settlement, a case conference was held in accordance with the rules or procedures. O. Reg. 43/16, s. 2 (4).

(11), (12) REVOKED : O. Reg. 43/16, s. 2 (5).

9.2 (1) Section 9.1 applies only with respect to settlements made on or after the transition date. O. Reg. 43/16, s. 3.

(2) Subsection 9.1 (3), as it read immediately before the transition date, applies with respect to settlements for which written notice under subsection 9.1 (2) was given before the transition date but which were made on or after the transition date. O. Reg. 43/16, s. 3.

(3) Section 9.1, as it read immediately before the transition date, applies with respect to settlements made before the transition date, with necessary modifications, and the following modifications:

1. Subsections 9.1 (2) to (5), as they read on February 28, 2002, continue to apply with respect to settlements for which written notice under subsection 9.1 (2) was given before March 1, 2002.
2. In addition to a mediation proceeding, subsection 9.1 (8) applies in respect of an application to the Licence Appeal Tribunal under subsection 280 (2) of the Act.
3. In addition to the right to mediate, litigate, appeal or apply to vary an order, subsection 9.1 (10) applies to the right to apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act or appeal from a decision of the Licence Appeal Tribunal. O. Reg. 43/16, s. 3.

(4) In this section,

"transition date" has the same meaning as in subsection 283 (5) of the Act. O. Reg. 43/16, s. 3.

DISPUTE RESOLUTION (SECTION 280 OF THE ACT)

10. If the Licence Appeal Tribunal finds that an insurer has unreasonably withheld or delayed payments, the Licence Appeal Tribunal, in addition to awarding the benefits and interest to which an insured person is entitled under the Statutory Accident Benefits Schedule, may award a lump sum of up to 50 per cent of the amount to which the person was entitled at the time of the award together with interest on all amounts then owing to the insured (including unpaid interest) at the rate of 2 per cent per month, compounded monthly, from the time the benefits first became payable under the Schedule. O. Reg. 43/16, s. 4.

11. REVOKED: O. Reg. 301/98, s. 2.

12., 13. REVOKED : O. Reg. 43/16, s. 4.

14. REVOKED: O. Reg. 301/98, s. 2.

PRESCRIBED ELEMENTS OF RISK CLASSIFICATION SYSTEM (SECTIONS 410 TO 417 OF THE ACT)

14.1 (1) For the purposes of section 260 of the Act, insurers shall use the following elements of a risk classification system in classifying risks for loss or damage to an automobile or loss of its use:

1. REVOKED: O. Reg. 250/15, s. 3 (1).
2. For collision or upset coverage, as referred to in the standard policy forms approved by the Superintendent under subsection 227 (5) of the Act, a deductible of $500 for contracts issued or renewed on or after April 15, 2004, unless the contract provides for a different amount.
3. For comprehensive coverage, as referred to in the standard policy forms approved by the Superintendent under subsection 227 (5) of the Act,
   i. a deductible of $300 for contracts issued or renewed on or after April 15, 2004 and before June 1, 2016, unless the contract provides for a different amount, and
   ii. a deductible of $500 for contracts issued or renewed on or after June 1, 2016, unless the contract provides for a different amount. O. Reg. 459/03, s. 1; O. Reg. 250/15, s. 3.

(2) Insurers shall use the following elements in their risk classification systems in classifying risks for damage to an automobile or its contents or loss of its use:

1. For contracts issued or renewed on or after April 15, 2004 and before September 1, 2010, $300 as the amount of the reduction referred to in clause 263 (5.1) (b) of the Act, unless the contract provides for a different amount.
2. For contracts issued or renewed on or after September 1, 2010, $500 as the amount of the reduction referred to in clause 263 (5.1) (b) of the Act, unless the contract provides for a different amount. O. Reg. 36/10, s. 3.

(3) Insurers shall use the following element in their risk classification systems in classifying risks for the Personal Vehicles — Private Passenger Automobiles category of automobile insurance:

1. For contracts issued or renewed on or after January 1, 2016, a discount in the rate of insurance in respect of an automobile that is equipped with winter tires. O. Reg. 222/15, s. 1.

APPLICATION OF SECTIONS 410 TO 417 OF THE ACT

15. (1) Sections 410 to 417 of the Act apply in respect of contracts of automobile insurance written on Ontario Automobile Policy 1 or Ontario Policy Form 2. O. Reg. 464/96, s. 5 (2).

(2) Sections 410 to 417 of the Act apply in respect of all types of endorsements to contracts of automobile insurance written on Ontario Automobile Policy 1 or Ontario Policy Form 2. O. Reg. 464/96, s. 5 (2).

(3) Despite subsections (1) and (2), sections 410 to 417 of the Act do not apply to any contract of automobile insurance that insures a fleet. O. Reg. 275/03, s. 6.

EXPEDITED RISK CLASSIFICATION AND RATE APPROVAL (SECTION 411 OF THE ACT)

15.1 (1) The percentage prescribed for the purpose of paragraph 1 of subsection 411 (1) of the Act is, for each coverage and category of automobile insurance, the percentage difference between the average of the insurer's existing rates for that coverage and category and the average of the insurer's proposed rates. O. Reg. 464/96, s. 6.

(2) For the purpose of paragraph 1 of subsection 411 (1) of the Act, the proposed rates must meet the following additional criteria:

1. The proposed rates relate only to the Personal Vehicles — Private Passenger Automobiles category of automobile insurance.
2. The effective date of the proposed rates for the insurer's renewal business is on or after January 1, 1997.
3. The average cumulative rate change for all coverages, calculated in accordance with the Section 411/412 Filing Guidelines published by the Financial Services Commission of Ontario, as they may be amended from time to time, is less than or equal to zero.
4. The percentage difference, for each territory used by the insurer, between the average of the existing rates for each coverage and the average of the proposed rates for that coverage is not more than 5 per cent higher or lower than the percentage difference, for all of Ontario, between the average of the existing rates for that coverage and the average of the proposed rates for that coverage.
5. No changes are proposed to the rating algorithm, differentials, discounts or surcharges used to determine the proposed rates. O. Reg. 464/96, s. 6; O. Reg. 301/98, s. 1; O. Reg. 222/15, s. 2.

(3) For the purpose of paragraph 2 of subsection 411 (1) of the Act, the proposed risk classification system may not contain,

(a) any new element; or

(b) any existing element that uses a different definition or different rating rules. O. Reg. 464/96, s. 6.

PROHIBITED RISK CLASSIFICATION ELEMENTS (SECTIONS 410 TO 417 OF THE ACT)

16. (1) Insurers are prohibited from using elements of a risk classification system described in this section in classifying risks for any coverage or category of automobile insurance. O. Reg. 780/93, s. 8 (1).

(2) No element of a risk classification system shall use past claims arising out of accidents occurring on or after September 1, 2010 for which an insured person was 25 per cent or less at fault. O. Reg. 36/10, s. 4.

(3) No element of a risk classification system shall use the existence or non-existence of a medical, surgical, dental or hospitalization plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for services and treatment that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule.* R.R.O. 1990, Reg. 664, s. 16 (3); O. Reg. 780/93, ss. 1, 8 (3).

(4) No element of a risk classification system shall use the existence or non-existence of an income continuation plan, a sick leave plan or any other arrangement or plan providing coverage to a person who would be an insured person under the contract for benefits that the insurer would otherwise be required to pay for under the *Statutory Accident Benefits Schedule.* R.R.O. 1990, Reg. 664, s. 16 (4); O. Reg. 780/93, ss. 1, 8 (4).

(4.1) No element of a risk classification system shall use a lapse in automobile insurance coverage unless,

(a) the insured person contravened section 2 of the *Compulsory Automobile Insurance Act* during the lapse in coverage; or

(b) the lapse of coverage resulted directly or indirectly from,

(i) the termination of a policy of automobile insurance as a result of the insured person's failure to pay the premiums due under the policy,

(ii) the suspension of the insured person's driver's licence as a result of a conviction for an offence related to the use or operation of an automobile, or

(iii) an accident or a conviction for an offence related to the use or operation of an automobile, if the insured person did not inform the insurer of the accident or conviction and the accident or conviction would likely have led to the insured person being charged a higher premium. O. Reg. 464/96, s. 7 (2).

(4.2) Except as permitted under subsection (4.3) or (5), no element of a risk classification system shall use any of the following factors:

1. The level of income of a person who would be an insured person under the contract.
2. The employment history of a person who would be an insured person under the contract.
3. The occupation, profession or employment circumstances of a person who would be an insured person under the contract, unless the contract is in respect of a commercial vehicle or a public vehicle or a vehicle used in the course of carrying on a business, trade or profession.
4. The fact whether a person who would be an insured person under the contract has a credit card.
5. The credit history of a person who would be an insured person under the contract.
6. The credit rating of a person who would be an insured person under the contract.
7. The fact whether a person who would be an insured person under the contract is bankrupt or has a history of bankruptcy.
8. The residence history of a person who would be an insured person under the contract.
9. The fact whether a person who would be an insured person under the contract owns a home.
10. The gross or net worth of a person who would be an insured person under the contract.
11. The indebtedness of a person who would be an insured person under the contract.
12. The fact whether a person who would be an insured person under the contract has made premium payments that were late or dishonoured in respect of a contract of automobile insurance that was not terminated by reason of the late or dishonoured payments.
13. A minor accident that occurred on or after June 1, 2016. O. Reg. 46/05, s. 2; O. Reg. 250/15, s. 4 (1, 2).

(4.3) The factor described in paragraph 13 of subsection (4.2) may be used in an element of a risk classification system if, within the previous three years, any automobiles that were or would be covered by the contract of automobile insurance were involved in a total of more than one minor accident and, in any of those accidents, the driver of that automobile was at fault. O. Reg. 250/15, s. 4 (3).

(4.4) For the purposes of subsections (4.2) and (4.3), an accident is a minor accident if all of the following circumstances exist:

1. The cost of damage to each automobile, including any associated property damage, did not exceed $2,000 and the cost of all such damages was paid by or on behalf of the driver who was at fault.
2. No personal injuries were sustained as a result of the accident.
3. No payment was made by any insurer with respect to damage to any automobile or property resulting from the accident. O. Reg. 250/15, s. 4 (3).

(5) Membership in an organized group shall not be used as an element of a risk classification system unless the group consists of no fewer than 100 members other than associate members of the group, a group marketing plan has been entered into that meets the requirements of section 17 and the group is,

(a) a trade union, a professional or occupational association or an alumni association;

(b) a non-profit entity that has been in existence for at least 24 months;

(c) a group of employees of the same employer; or

(d) a group of members of a credit union that satisfies the requirements of subsection (7). O. Reg. 275/03, s. 7.

(6) An organization formed primarily for the purpose of purchasing or providing goods or services does not constitute a non-profit entity for the purposes of clause (5) (b). O. Reg. 275/03, s. 7.

(7) A group of members of a credit union constitute an organized group for the purposes of clause (5) (d) if the following rules are satisfied:

1. The bond of association in respect of the credit union for the purposes of subsection 30 (1) of the *Credit Unions and Caisses Populaires Act, 1994* is a common bond of occupation or association referred to in clause 30 (2) (a) of that Act.
2. The members of the credit union who belong to the group are,
   i. employees of the same employer,
   ii. members of the same trade union, or
   iii. members of the same professional or occupational association.
3. The group of members does not include any person admitted to the credit union who does not come within the common bond of association described in paragraph 1, unless the person is an associate member of the group under subsection (8), (9) or (10). O. Reg. 275/03, s. 7.

(8) Despite paragraph 2 of subsection (7), the following persons may be included in an organized group described in clause (5) (d) in respect of a particular credit union, but only as associate members of the group:

1. Employees of the credit union.
2. Retired employees of the credit union who receive or are entitled to receive retirement benefits from the credit union. O. Reg. 275/03, s. 7.

(9) Retired employees of the same employer who receive or are entitled to receive retirement benefits from the employer may be included in a group referred to in clause (5) (c) or subparagraph 2 i of subsection (7), but only as associate members of the group. O. Reg. 275/03, s. 7.

(10) Each of the following persons may be included in a group referred to in clause (5) (a), (b), (c) or (d), but only as an associate member of the group:

1. The spouse of a member or associate member of the group.
2. A person under 25 years of age who is a child of a member or associate member of the group or of the spouse of a member or associate member of the group and,
   i. resides in the same dwelling as the member or associate member, or the spouse of the member or associate member, as the case may be, or
   ii. attends an educational institution on a full-time basis.
3. The spouse of a child described in paragraph 2. O. Reg. 275/03, s. 7; O. Reg. 316/05, s. 1 (1-4).

(11) A risk classification system shall not include an element that results in the exclusion of a member or associate member of an organized group referred to in subsection (5) for the purposes of risk classification if,

(a) the insurance is sold under a group marketing plan within the meaning of section 17; and

(b) coverage is for a private passenger vehicle within the meaning of the Plan of Operation established by the Facility Association under subsection 7 (3) of the *Compulsory Automobile Insurance Act*. O. Reg. 275/03, s. 7.

(12) No element of a risk classification system shall result in a change in the classification of an insured before the next renewal date of the insured's policy because,

(a) a group marketing plan within the meaning of section 17 terminates; or

(b) the insured ceases to be a member or associate member of an organized group referred to in subsection (5). O. Reg. 275/03, s. 7.

(13) Subject to subsection (12), no element of a risk classification system that uses membership in an organized group referred to in subsection (5) shall apply to an insured who ceases to be a member or associate member of the group. O. Reg. 275/03, s. 7.

(14) An organized group that met the requirements of this section and section 17 as they read on September 30, 2003 shall be deemed to meet the requirements of this section and section 17 after that day if,

(a) membership in the group was an element of a risk classification system before October 1, 2003; and

(b) a group marketing plan has been entered into that meets the requirements of section 17. O. Reg. 275/03, s. 7.

(15) In this section,

"credit union" means a credit union as defined in section 1 of the *Credit Unions and Caisses Populaires Act, 1994*; ("caisse populaire")

"spouse" has the same meaning as in Part VI of the Act. ("conjoint") O. Reg. 275/03, s. 7; O. Reg. 316/05, s. 1 (5).

GROUP MARKETING PLANS

17. (1) In this section,

"group marketing plan" means an arrangement made in writing between an insurer and a sponsor to market automobile insurance to members of an organized group referred to in subsection 16 (5); ("plan de commercialisation de groupe")

"sponsor" means a person who is authorized to enter into a group marketing plan on behalf of an organized group referred to in subsection 16 (5). ("parrain") O. Reg. 275/03, s. 8 (1).

(1.1) A group marketing plan shall include the details of the arrangement, including,

(a) the name of the insurer and the name of the sponsor or sponsors and their respective responsibilities;

(b) the name of the broker or agent;

(c) the effective date of the group marketing plan;

(d) information with respect to fees;

(e) whether or not the group marketing plan is made to the exclusion of another group marketing plan with respect to the group; and

(f) the procedure for terminating the group marketing plan. O. Reg. 275/03, s. 8 (1).

(2) An insurer shall not sell automobile insurance under a group marketing plan if any person is required to purchase insurance under the plan or is subject to a penalty for failing to purchase insurance under the plan. O. Reg. 553/94, s. 3.

(3) An insurer, agent or broker who sells automobile insurance under a group marketing plan shall not accept an application from a person for insurance coverage unless, not later than 30 days after accepting the application, the insurer, agent or broker makes full and fair disclosure in writing to the person of all features of the group marketing plan and the insurance coverage, including,

(a) the group marketing plan's provisions relating to group discounts, policyholder services, termination of the plan and termination of eligibility; and

(b) the financial interests of the sponsor in the group marketing plan. O. Reg. 553/94, s. 3; O. Reg. 275/03, s. 8 (2, 3).

(3.1) For the purposes of clause (3) (b), the financial interests of the sponsor include any lump sum payment, percentage of premium or other payment received by the sponsor from the insurer as a result of a person purchasing automobile insurance coverage through the plan. O. Reg. 275/03, s. 8 (4).

(4) A person who collects premiums under a group marketing plan, other than an agent or broker, shall provide adequate administrative facilities for the collection of premiums and shall be deemed to be the agent of the insurer for the purpose of collecting premiums. O. Reg. 553/94, s. 3.

(5) All premium funds received or receivable by a person under a group marketing plan, other than by an agent or broker, shall be deemed to be trust funds held for the benefit of the insurer. O. Reg. 553/94, s. 3.

(6) A person who receives or is entitled to receive premium funds under a group marketing plan shall not assign, pledge, mortgage or in any way charge the funds. O. Reg. 553/94, s. 3.

(7) An assignment, pledge, mortgage or other charge of premium funds contrary to subsection (6) is void. O. Reg. 553/94, s. 3.

PUBLIC ADJUSTERS — STATUTORY ACCIDENT BENEFITS (SECTION 398 OF THE ACT)

18. A person who is authorized to provide legal services in Ontario pursuant to the *Law Society Act* is exempt from subsection 398 (1) of the *Insurance Act* in respect of a claim for benefits under the Statutory Accident Benefits Schedule. O. Reg. 62/08, s. 1.

TRANSITION

19. In this section and sections 20 to 25,

"Director" means the director of arbitrations appointed under subsection 6 (1) of the pre-transition date Act; ("directeur")

"pre-transition date Act" means the Act as it read immediately before the transition date; ("loi antérieure à la date de transition")

"regulations under the pre-transition date Act" means the regulations under the pre-transition date Act, as those regulations read immediately before the transition date; ("règlements de la loi antérieure à la date de transition")

"rules under section 21 of the pre-transition date Act" means the rules under section 21 of the pre-transition date Act, as they read immediately before the transition date, as amended by the Director under subsection 20 (4); ("règles prévues à l'article 21 de la loi antérieure à la date de transition")

"transition date" has the same meaning as in subsection 283 (5) of the Act. ("date de transition") O. Reg. 43/16, s. 5.

20. (1) The following are continued after the transition date:

1. The office of the director of arbitrations appointed under section 6 of the pre-transition date Act.
2. Arbitrators appointed under section 8 of the pre-transition date Act.
3. Mediators appointed under section 9 of the pre-transition date Act. O. Reg. 43/16, s. 5.

(2) Section 6, subsection 7 (4) and sections 8 and 9 of the pre-transition date Act apply with respect to the officials referred to in subsection (1). O. Reg. 43/16, s. 5.

(3) The powers and duties that the officials referred to in subsection (1) had before the transition date continue, with necessary modifications, for the purposes of proceedings continued under section 21 of this Regulation or that may be commenced under section 22 of this Regulation. O. Reg. 43/16, s. 5.

(4) The power of the Director to amend the rules made under section 21 of the pre-transition date Act is continued after the transition date. O. Reg. 43/16, s. 5.

21. (1) A proceeding described in subsection (2) that was commenced but not completed before the transition date is continued after that date. O. Reg. 43/16, s. 5.

(2) The proceedings referred to in subsection (1) are the following:

1. A mediation under section 280 of the pre-transition date Act.
2. A proceeding in a court of competent jurisdiction brought in accordance with clause 281 (1) (a) of the pre-transition date Act.
3. An arbitration under section 282 of the pre-transition date Act.
4. An appeal under section 283 of the pre-transition date Act.
5. An application for a variation or revocation of an order under subsection 284 of the pre-transition date Act. O. Reg. 43/16, s. 5.

(3) The following apply, with necessary modifications, and with the modifications specified in subsections (4) and (5), with respect to proceedings continued under subsection (1):

1. The pre-transition date Act.
2. The regulations under the pre-transition date Act.
3. The rules under section 21 of the pre-transition date Act. O. Reg. 43/16, s. 5.

(4) Subject to subsection (5), if after the transition date an agreement is entered into under subsection 280 (5) of the pre-transition date Act to extend the time for the completion of the mediation process by more than 30 days, the agreement is deemed to extend the time by 30 days. O. Reg. 43/16, s. 5.

(5) Subsection (4) does not apply if the Director consents to the extension. O. Reg. 43/16, s. 5.

(6) For greater certainty, if mediation fails, a court proceeding or arbitration may not be commenced on or after the transition date but the insured person or the insurer may apply to the Licence Appeal Tribunal under subsection 280 (2) of the Act. O. Reg. 43/16, s. 5.

22. (1) The following proceedings may be commenced, on or after the transition date, in respect of the arbitrations described in subsection (2):

1. An appeal under section 283 of the pre-transition date Act.
2. An application for a variation or revocation of an order under section 284 of the pre-transition date Act. O. Reg. 43/16, s. 5.

(2) The arbitrations referred to in subsection (1) are the following:

1. An arbitration under section 282 of the pre-transition date Act completed before the transition date.
2. An arbitration continued under paragraph 3 of subsection 21 (2). O. Reg. 43/16, s. 5.

(3) Subsection 21 (3) applies with respect to proceedings that may be commenced under subsection (1). O. Reg. 43/16, s. 5.

23. (1) An evaluation under section 280.1 of the pre-transition date Act that was not completed before the transition date ceases on that date. O. Reg. 43/16, s. 5.

(2) For greater certainty, an evaluation under section 280.1 of the pre-transition date Act may not be commenced on or after the transition date. O. Reg. 43/16, s. 5.

24. The application of clause 6 (2) (b) of the *Motor Vehicle Accident Claims Act* with respect to disputes described in subsection 283 (2) of the Act is modified as follows:

1. The references in that clause to sections of the Act are deemed to be references to sections 274 and 279 to 287 of the pre-transition date Act.
2. To the extent that the regulations under the pre-transition date Act and the rules under section 21 of the pre-transition date Act applied under that clause prior to the transition date, those regulations and rules apply under that clause. O. Reg. 43/16, s. 5.

25. (1) Section 25 of the *Financial Services Commission of Ontario Act, 1997*, as it read immediately before the transition date, and Part II of Ontario Regulation 11/01 (Assessment of Expenses and Expenditures) made under that Act, as it read immediately before the transition date, apply in respect of:

1. Automobile insurance dispute resolution activity prior to the transition date.
2. A proceeding continued or commenced under section 21 or 22 of this Regulation. O. Reg. 43/16, s. 5.

(2) For the purpose of applying this section, any references in the *Financial Services Commission of Ontario Act, 1997* or Ontario Regulation 11/01, as they read immediately before the transition date, to provisions of the *Insurance Act* shall be deemed to be references to those provisions as they read immediately before the transition date. O. Reg. 43/16, s. 5.

TABLE 1 REVOKED: O. Reg. 36/10, s. 5.

SCHEDULE REVOKED: O. Reg. 43/16, s 6.

FORM 1 REVOKED: O. Reg. 780/93, s. 9.

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Financial Services Commission of Ontario, “Usage-Based Automobile Insurance Pricing in Ontario,” Bulletin A-16/16, December 5, 2016.

https://www.fsco.gov.on.ca/en/auto/autobulletins/2016/Pages/a-16-16.aspx

Casualty Actuarial Society
4350 North Fairfax Drive, Suite 250
Arlington, VA 22203

703.276.3100 tel
703.276.3108 fax

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What do the coverages mean?

Accident Benefits: Benefits that you or other insured persons may receive if injured or killed in an auto accident. The benefits may include: income replacement; medical, rehabilitation and attendant care; funeral and death expenses. Optional accident benefits are also available above the standard accident benefits in your auto policy.

All Perils coverage: This combines Collison or Upset and Comprehensive coverages. In addition, it covers loss or damage caused if a person who lives in your home steals the vehicle that is covered by your insurance policy. It also covers you if an employee who drives or uses, services or repairs your vehicle, steals it.

Attendant Care Benefit: Pays for expenses incurred for an aide or attendant to look after you if you have been seriously injured in an auto accident.

Caregiver Benefit: If you are providing full-time care to dependants and can no longer provide that care as the result of a catastrophic injury suffered in an auto accident, you may be eligible for caregiver benefits to reimburse you for your expenses to hire someone to care for your dependants.

Catastrophic injury: Is a serious and life-threatening injury, with the full definition set out in regulation. It may involve the loss of use of limbs or complete loss of eyesight as well as other injuries as defined in regulation. In Ontario there is a higher level of benefits available when the injury is catastrophic. If you suffer an injury in an accident, you can apply and be assessed for a determination of whether your injury qualifies as "catastrophic".

Collision or Upset coverage: Pays for losses caused when your vehicle is involved in a collision with another object, including another vehicle, or rolls over.

Comprehensive coverage: Pays for losses for certain perils, such as falling or flying objects, and vandalism.

Death and Funeral Benefit: If you die as a result of an auto accident, the death benefit provides a lump sum payout to your spouse and your dependants; the funeral benefit provides a lump sum payout to cover the cost of your funeral expenses.

Dependant Care Benefit: Pays for additional expenses incurred to care for your dependants if you are employed and are injured in an auto accident and not receiving the Caregiver Benefit.

Direct Compensation-Property Damage (DC-PD): Covers damage to your vehicle or its contents if another person was at fault for the accident. It is called direct compensation because even though someone else causes the damage, you collect directly from your own insurer. The accident must also occur in Ontario and both drivers must be insured by an insurance company licensed in the province.

Family Protection Coverage (OPCF 44R): Covers you for the difference between the at-fault driver's Third Party

Liability limit and your own Third Party Liability limit if someone with less liability coverage than you injures you in an accident.

Housekeeping and Home Maintenance expenses: If you are unable to perform your usual duties due to a catastrophic injury, this benefit pays for reasonable and necessary additional expenses for someone to complete your usual duties.

Income Replacement Benefit: If you cannot work as the result of an auto accident, you may be eligible for basic weekly income replacement benefits of up to $400. This benefit commences after one week.

Indexation Benefit: The automatic adjustment of the income replacement benefit, non-earner benefit, attendant care benefit or medical and rehabilitation benefit according to the Consumer Price Index for Canada to compensate for inflation.

Medical and Rehabilitation Benefit: Covers the cost of reasonable and necessary medical and rehabilitation expenses (e.g., physiotherapy, prescriptions) that are not covered by OHIP or your disability insurance plan but which are listed in the Statutory Accident benefits schedule. Other expenses not listed might be covered if they are agreed by the insurer and are seen as essential to your recovery.

Specified Perils coverage: Covers damage to your vehicle caused by one of the following perils: fire; theft or attempted theft; lightning, windstorm, hail or rising water; earthquake; explosion; riot or civil disturbance; falling or forced landing of an aircraft or parts of an aircraft; or the standing, sinking, burning, derailment or collision of any kind of transport in, or upon which, an insured vehicle is being carried on land or water.

Third Party Liability: This section of your automobile insurance policy protects you if someone else is killed or injured, or their property is damaged. It will pay for claims as a result of lawsuits against you up to the limit of your coverage, and will pay the costs of settling the claims. By law you must carry a minimum of $200,000 in Third-Party Liability coverage but options exist to increase the minimum amount

Tort Deductible: The amount that is deducted from a settlement or court award for pain and suffering.

Uninsured Automobile coverage: Protects you and your family if you are injured or killed by a hit-and-run driver or by an uninsured motorist. It also covers damage to your vehicle caused by an identified uninsured driver.

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What do the terms mean?

Coverage: The scope of protection provided under an insurance policy.

Deductible: An insurance deductible is the amount you have to pay for losses and damages for which you are covered before your insurance payments kick in. Raising deductibles means you'll contribute more toward the loss if you have an accident, but it can mean a lower insurance premium.

Endorsement: Any change made to your existing auto insurance policy that either expands or restricts coverage.

Exclusions: Items or conditions that are not covered by the general insurance contract.

Minor Injury: Minor injuries include sprains and strains, contusions and lacerations, or whiplash injuries. If you are deemed to have suffered a minor injury in an auto accident, your medical and rehabilitation benefits will be fixed at a maximum limit of $3,500, regardless of any optional increased benefits you have purchased.

Premium: The amount of money that you pay for your insurance policy.

Risk Classification: Is a grouping of risks or policyholders with similar risk characteristics to determine rates. Typical risk classifications are based on: type of vehicle, use of vehicle, driving record of drivers, age, gender and marital status of drivers and territory.

Tort: A wrong that is committed by one person on another that causes injury to that person. A tort can be either intentional or unintentional. Liability insurance is mainly purchased to cover unintentional torts.
Underwriting: The process of selecting or rejecting risks for insurance.

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Common Pitfalls and Practical Considerations in Risk Transfer Analysis

Derek Freihaut, FCAS, MAAA, and Paul Vendetti, FCAS, MAAA

The current papers available on risk transfer have provided background and a general description of the tools available for analysis. Risk transfer analysis has many nuances that can trip up an actuary testing a contract. This paper discusses several of these pitfalls and provides direction on how to address them based on previously published materials from the accounting boards, the American Academy of Actuaries (AAA), and the Casualty Actuarial Society (CAS). This paper also addresses several outstanding risk transfer concerns that have no easy answers. While these issues do not have obvious solutions, the intent of the paper is to shed some light on these topics and open the door for further discussion.

To facilitate the discussion of these common pitfalls and practical considerations two example contracts are reviewed with an Expected Reinsurer Deficit (ERD) calculated for both.

Keywords: Risk transfer, Expected Reinsurer Deficit (ERD), FAS 113, Reinsurance Attestation Supplement (RAS), SSAP 62.

1. INTRODUCTION

Current papers available on risk transfer have provided background and a general description of the tools available for analysis. However, risk transfer analysis has many seemingly minor nuances that can trip up an actuary testing a contract. In this paper, we will discuss several of these pitfalls and provide direction on how to address them based on previously published materials from the accounting boards, the American Academy of Actuaries (AAA), and the Casualty Actuarial Society (CAS). We will also highlight a number of practical considerations that have not received as much attention in the available literature. While these practical considerations do not have obvious solutions, we hope to shed some light on the available options and open the door for further discussion on the topic.

1.1 Risk Transfer in Current Literature

This discussion is derived from a review of existing risk transfer literature, most notably "Reinsurance Attestation Supplement 20-1: Risk Transfer Testing Practice Note" from the AAA Committee on Property and Liability Financial Reporting and "Risk Transfer Testing of Reinsurance Contracts: Analysis and Recommendations" from the CAS Research Working Party on Risk Transfer Testing [1][2]. We also relied heavily on the accounting standards, Financial Accounting Standard No. 113, "Considerations in Risk Transfer Testing" (FAS 113) and SSAP 62, "Property and Casualty Reinsurance." While some discussion of the CAS Working Party paper and the AAA Practice Note is necessary, this paper is an attempt to go beyond the framework provided in the

current literature and review the more routine issues faced by actuaries in reviewing reinsurance transactions for risk transfer.

1.2 Objective

In this paper, we will discuss several pitfalls and practical considerations with risk transfer analyses. We will provide direction on how to address the pitfalls based on previously published materials and we hope to shed some light on the available options concerning the practical considerations and open the door for further discussion on the topics.

1.3 Outline

In Section 2 of this paper we will present a brief history and background of risk transfer, including a discussion of the terms "substantially all" and "self-evident," as well as discussion on measuring risk transfer and risk transfer thresholds.

Section 3 will contain a discussion on the pitfalls and practical considerations. We will start by showing two sample contracts that will be used as a basis for much of the discussion, and how to analyze risk transfer. Next we will cover various pitfalls, including discussion on the following topics:

- Profit Commissions
- Reinsurer Expenses
- Interest Rates and Discount Factors
- Premiums
- Evaluation Date
- Commutation and Timing of Payments

In the last part of Section 3, we will highlight some of the practical considerations in risk transfer testing, including discussion on:

- Parameter Selection
- Interest Rate
- Payment Pattern
- Loss Distribution

- Parameter Risk
- Use of Pricing Assumptions
- Commutation Clauses

The fourth and final section of the paper will contain a short wrap up, conclusions and a reminder that risk transfer testing is a principle-based exercise and not just a "plug and chug" methodological exercise.

2. BRIEF HISTORY OF RISK TRANSFER

Since the reinsurance goals of ceding companies are as different as the risks reinsured, reinsurance contracts contain a variety of terms and conditions that can impact the economic structure of the reinsurance transaction. When a contract qualifies as reinsurance there are certain accounting benefits that a ceding company can realize.

The demonstration of risk transfer for reinsurance is required by FAS 113 in order for the contract to receive reinsurance accounting treatment under Generally Accepted Accounting Principles (GAAP). Statutory Accounting Principles (SAP) defined in SSAP 62 are similar in guidance to FAS 113. Generally, both standards for risk transfer require that:

1. The reinsurer assumes significant insurance risk under the reinsured portion of the underlying insurance agreement; and

2. It is reasonably possible that the reinsurer may realize a significant loss from the transaction.

Because the terms "significant insurance risk," "reasonably possible," and "significant loss" are not defined in either accounting standard, the challenge is to appropriately interpret and apply the accounting standards to each reinsurance transaction.

The abuses of the past several years in the use of finite reinsurance contracts have highlighted the need to document and quantify risk transfer. An increase in scrutiny of reinsurance contracts led to the introduction of the "Reinsurance Attestation Supplement," in the 2005 NAIC Annual Statement.

The supplement requires the chief executive officer (CEO) and chief financial officer (CFO) to confirm that:

1. There are no separate written or oral agreements between the reporting entity and assuming

reinsurer.

2. There is documentation for every reinsurance contract for which risk transfer is not reasonably self-evident that details the transaction's economic intent and that documentation evidencing risk transfer is available for review.

3. The reporting entity complies with all requirements set forth in the Statement of Statutory Accounting Principles No. 62, "Property and Casualty Reinsurance" (SSAP 62).

4. The appropriate controls are in place to monitor the use of reinsurance.

CEOs and CFOs have the responsibility to attest to risk transfer in reinsurance transactions. However, since actuaries are uniquely qualified to quantify and evaluate risk transfer, they are increasingly being called upon to quantify risk transfer and provide the necessary documentation.

As mentioned above, GAAP and SAP accounting standards contain similar wording about what is required for risk transfer to be present. Most notably, both require the presence of insurance risk. Insurance risk has two components, underwriting risk and timing risk. If both of these types of risk are not present, then insurance risk has not been transferred. While risk transfer is independently defined in each standard, we are unaware of any examples of a contract that would meet the requirements of one standard, but not the other. Contracts that qualify according to one standard are generally considered to meet the requirements of the other standard as well.

2.1 One Exemption from Risk Transfer Requirements – "Substantially All"

Both GAAP and SAP accounting standards specifically require that it be reasonably possible that the reinsurer may realize a significant loss from the transaction, except in cases where the reinsurer meets the "substantially all" requirement. This is meant to exempt a very narrow definition of contracts where the reinsurer assumes "substantially all of the insurance risk relating to the reinsured portions of the underlying insurance contracts." The most common examples are straight quota share or individual risk contracts with no loss ratio caps or other risk limiting features. The reason for this exemption is that it allows companies to acquire qualifying reinsurance on inherently profitable books of business where it may not be reasonably possible that the reinsurer will realize a significant loss.

2.2 Required Risk Transfer Documentation and Reasonably Self-Evident

When the NAIC introduced the "Reinsurance Attestation Supplement" (RAS) in 2005 they also

introduced a new term to the risk transfer lexicon, "reasonably self-evident." The RAS requires documentation "for every reinsurance contract for which risk transfer is not reasonably self-evident." This classification of contracts is meant to reduce the need to rigorously test every reinsurance contract for risk transfer. Unfortunately, very little guidance was offered on what "reasonably-self evident" encompasses. The AAA Practice Note followed the introduction of the RAS and laid out some general guidelines for establishing when the presence of risk transfer is reasonably self-evident. The guidelines were general in nature and provided characteristics to look for in contracts to determine when risk transfer is reasonably self-evident and when it is not.

The CAS Working Party paper took these guidelines one step further and provided a list of specific contract categories where risk transfer is reasonably self-evident based on meeting a 1% Expected Reinsurer Deficit (ERD) threshold. They point out that this list is preliminary and expect it could be considerably expanded. They also point out that there are exceptions to the list, such as when a contract looks contrived. We feel that it can be dangerous to attempt to codify this terminology with explicit definitions. Every contract is different and must have its terms thoroughly reviewed.

Specifically, the CAS Working Party paper lists a couple of categories that we do not agree are always reasonably self-evident such as individual risk contracts and certain long tail excess of loss treaties. Individual risk treaties with no significant risk limiting features would likely be exempt from the accounting standards since the reinsurer assumes "substantially all" of the underlying risk. For individual risk contracts that do not qualify for this exemption, it is not hard to imagine special features that would restrict risk transfer.

For long tail excess of loss treaties, the CAS Working Party paper provides a few numerical qualifications to meet the reasonably self-evident standard. For excess of loss contracts that are not on short tail exposures, the CAS Working Party paper finds that any contract with aggregate limits no less than one per occurrence limit or twice the premium, meets the reasonably self-evident criteria if there are no ceding commissions and the rate on line is below 500%. It is not difficult to construct a contract around these parameters that clearly does not transfer risk. An extreme example would be a single doctor paying $1M for a $1M x $5M medical malpractice treaty with a $2M aggregate limit. This contract passes the established criteria for the risk transfer to be reasonably self-evident, but I think most would agree that not enough risk is transferred in this contract for it to qualify as reinsurance. This is obviously an unrealistic example, but it shows how applying specific parameters on the terminology can lead to unintended results.

The RAS requires documentation "for every reinsurance contract for which risk transfer is not reasonably self-evident." It seems obvious that any contract requiring a more rigorous review would also require documentation for the model results. However, it is our recommendation that documentation be kept on all reinsurance contracts reviewed for risk transfer. We think it is valuable to have documentation for those contracts found to be exempt for any reason, although the most notable are those that meet the "substantially all" clause. We find it to be just as important to document any contract where the risk transfer is found to be reasonably self-evident. While the term reasonably self-evident might lead one to believe the conclusion is obvious and anyone who picks up the contract will reach the same conclusion, not all contracts that meet this standard are clear cut. This is of particular importance if you are using any reference, such as the previously discussed list from the CAS Working Party Paper, to make your determination. The AAA Practice Note also recommends keeping documentation for reasonably self-evident contracts. The practice note also includes several example checklists in the appendix from companies who have made this type of documentation standard.

2.3 Selected Risk Measuring Method – Expected Reinsurer Deficit (ERD)

Neither SSAP 62 nor FAS 113 provide a clear numeric trigger of when risk transfer fails. The "10-10" rule was developed as a benchmark to give meaning to the criteria in the two accounting standards. The "10-10" rule says that a reinsurance contract exhibits risk transfer if there is at least a 10% chance of a 10% or greater loss for the reinsurer.

Another method that has gained acceptance and overcomes some shortcomings of the "10-10" rule is the Expected Reinsurer Deficit (ERD). ERD can be viewed as the probability of a net present value (NPV) underwriting loss for the reinsurer multiplied by the NPV of the average severity of the underwriting loss. A treaty is typically considered to exhibit risk transfer if ERD is greater than 1%, which is consistent with the "10-10" rule (10% loss multiplied by 10% chance is a 1% ERD). Therefore, contracts that qualify for risk transfer under the "10-10" rule generally qualify under a 1% ERD. We will discuss thresholds more in the next section.

ERD has not been explicitly endorsed by any professional body. However, while the CAS Working Party paper stopped short of endorsing ERD, they did prefer its use as a de facto standard over the "10-10" rule. There are a handful of other methods, but none of them are as widely used as the two previously mentioned. Some methods, such as Value at Risk (VaR) and Tail Value at Risk (TVaR) are generalizations of methodologies we have already discussed. Others, such as the

Right Tail Deviation (RTD) method by Wang outlined in the CAS practice note, have not caught on due to the complexity of the model [4][5]. There are also methods, such as the Risk Coverage Ratio (RCR) by Ruhm, which have not caught on due to the exclusion of key variables [3]. RCR does an adequate job of evaluating risk in the losses that are transferred, but it does not make any comparison to premium.

In this paper we will test for risk transfer using a simple cash flow simulation and calculating the Expected Reinsurer Deficit (ERD). While some of these other measures could be used in our example analysis we will use only ERD in the interest of consistency.

2.4 Risk Transfer Thresholds

The CAS Working Party paper began some brief discussion about what the appropriate guideline threshold percentage should be and suggested that further research be done. Currently, because it is consistent with the "10-10" rule, the most commonly recognized threshold for ERD is 1%. Some have suggested that a 2% threshold would be more appropriate. Our recommendation is to continue using the 1% threshold until a more thorough analysis suggests otherwise. Using 2% would be a more stringent guideline, but the 2% threshold does not appear to be any less arbitrary than the current 1% threshold. While the 1% threshold is based on the somewhat arbitrary "10-10" rule, there is some reasoning behind it. The "10-10" rule was loosely derived from the accounting standard language that required that the reinsurer face a "reasonable chance of a significant loss." For the purposes of risk transfer, it has been commonly accepted that a 10% chance is a "reasonable chance" and that a 10% loss is a "significant loss." From these two accepted values, the ERD of 1% has been derived and this threshold continues to gain acceptance.

The CAS Working Party paper also mentions the possibility of including other requirements, such as a required maximum loss, in order to show risk transfer. We recommend not complicating the methodology with extra arbitrary requirements. While adding a maximum loss requirement may feel intuitive, it begins to complicate the process and makes explaining results to the decision-makers more difficult. Adding requirements can also lead to more engineering of contrived contracts. If a maximum loss is required, any contract can be rewritten to incorporate a rare maximum loss.

3. COMMON PITFALLS AND PRACTICAL CONSIDERATIONS DISCUSSION

In order to illustrate the common pitfalls that can affect a risk transfer analysis it is first important to demonstrate how a basic risk transfer analysis is completed, highlighting many of the issues that can surface along the way. Many of the pitfalls referenced in this section are further emphasized later in the paper.

To demonstrate risk transfer analysis two reinsurance contracts are used. Contract #1 is a quota share contract while Contract #2 is an excess of loss contract.

The terms for Contract #1 are summarized in Table 1:

Table 1 - Summary of Terms - Contract #1

Inception Date	1/1/2008
Estimated Subject Premium	10,000,000
Reinsurance Premium	8,000,000
Cession	80.0%
Ceding Commission	25.0%
Profit Commission	
Loss Ratio	66.0%
Profit Swing	5.0%
Loss Ratio Cap	100.0%
Reinsurers Expenses as % of Prem.	
Brokerage	*2.0%*
Underwriting Exp.	*2.0%*
Federal Excise Taxes	*1.0%*

The underlying exposure for Contract #1 is multi-state workers compensation. The company has written workers compensation for a number of years. The cession is a straightforward quota share with a loss ratio cap of 100%. This loss ratio cap has the potential to significantly affect risk transfer. The presence of the loss ratio cap does not always indicate a lack of risk transfer. Contracts, with loss ratio caps at 200% to 300% can clearly result in a significant loss ot the reinsurer. Secondly, there is a profit commission provision whereby the ceding company will receive a profit commission if the underlying loss ratio is 66% or less with maximum profit provision of 5.0%. The profit provision swings on a one-to-one basis with the loss ratio. The impact of profit

provisions on risk transfer is discussed later in the paper.

The terms of the second contract are summarized in Table 2:

Table 2 - Summary of Terms - Contract #2

Inception Date	1/1/2008
Estimated Subject Premium	10,000,000
Provisional Reinsurance Rate	8.50%
Provisional Premium	800,000
Maintenance Fee	50,000
Retention	250,000
Limit	250,000
Swing Rate	
Swing Loss Ratio	75.0%
Minimum Rate	6.00%
Maximum Rate	11.00%
Reinsurers Expenses as % of Prem.	
Brokerage	*10.0%*
Underwriting Exp.	*7.0%*
Federal Excise Taxes	*1.0%*

This is an excess of loss contract covering workers compensation exposure that has a number of potential risk limiting features. The contract is swing rated with a provisional rate of 8.5% which can swing up or down by 2.5%. The swing is based on a ceded loss ratio of 75.0%. Secondly, there is a feature that states that the contract is automatically commuted after five years unless the ceding company pays an additional maintenance fee of $50,000.

For the two example contracts it is not reasonably "self-evident" that risk transfer exists due to the presence of such features as low loss ratio caps and swing-rated premiums.

3.1 Analyzing Risk Transfer

The first step in any risk transfer review is to understand the reinsurance contract's terms and conditions, focusing especially on the terms that can affect the amount of risk being transferred. Care must be taken to understand not only the terms of the treaty but also when those terms will be triggered. In Contract #2 there is a commutation clause that requires a maintenance fee to avoid early commutation that is triggered after five years.

Next the reporting dates and premium due dates need to be determined. In both example

contracts the reinsurance premium is payable in quarterly installments due one month after quarter end , i.e., on April 30, July 31, October 31, and January 31 of the following year.

In both contracts there is not a pre-defined loss payment schedule and therefore losses are reimbursed as they occur. To determine the net present value of the losses, a loss payment pattern reflecting the underlying exposure being reinsured is applied. It is further assumed that losses in any given calendar year are paid at the midpoint of the year.

For Contract #2, it is assumed that the first swing rate adjustment is applied two years after the contract's effective date. Most contracts will define the timing of the experience adjustments to the premium. It is also assumed in the model that the impact of the adjustment is correctly identified for the first adjustment with no further changes to the ceding commission necessary. This assumption implies that the ultimate loss ratio is known at the first adjustment.

The second assumption is that the commutation fee will be paid by the ceding company after five years. This is a reasonable assumption since the ceding company may not want to commute the contract and reassume the risk of changes in the unpaid claims estimates.

The risk transfer analysis was completed using Monte Carlo simulation, modeling first the direct loss payments and then projecting the treaty cessions from the direct loss payments. The ceded losses are then discounted to the effective date of the treaty. Next, the final premium amounts are determined based upon the nominal treaty results, not on the discounted premiums or losses. Any premium adjustments are determined from the modeled results. Care must be taken so that the premium payment dates are appropriately modeled. Like the losses, premium payments are discounted to the treaty effective date. The reinsurer profit/loss is then calculated for each iteration of the simulation as the net present value (NPV) of all payments made from the ceding company to the reinsurer minus the NPV of all the payments made from the reinsurer to the ceding company.

All cash flows between the ceding company and reinsurer need to be represented in the model whether they are called premiums, fees, or experience adjustments. Reinsurer expenses are not included in the model since this is not a cash flow between the ceding company and the reinsurer. For instance in Contract #2 the maintenance fee is included in the analysis and the reinsurer expenses are not. The reinsurer expenses are not part of the risk assumed by the reinsurer from the ceding company.

Finally, the Expected Reinsurer Deficit (ERD) is calculated. ERD can be viewed as the probability of a net present value (NPV) underwriting loss for the reinsurer multiplied by the NPV

of the average severity of the reinsurer underwriting losses. The resulting ERD values are 2.85% for Contract #1 and 2.09% for Contract #2. Details of the simulation and ERD calculation can be found in Appendices A and B. These results indicate that both of these contracts appear to exhibit risk transfer. This conclusion is based on the calculated ERD values and the commonly accepted threshold of 1.0%. As with any risk transfer decision, the ultimate determination must be made by the company CEO or CFO or both.

3.2 Common Pitfalls

This section will highlight easy-to-make mistakes or common pitfalls. Most of these come from our own experience in reviewing contracts for risk transfer and reviewing risk transfer analyses of other actuaries. It is our intent to provide concrete solutions citing previously published materials.

3.2.1 Profit Commissions

Profit commissions generally should not be considered in risk transfer analysis. When determining if risk transfer is present, the analysis focuses only on the scenarios resulting in a loss for the reinsurer. While profit commissions can affect the economic results of a treaty, they usually are not triggered during a reinsurer loss.

This exclusion of profit commissions and focus on reinsurer loss scenarios is not necessarily intuitive. However, the accounting standards clearly state that the presence of risk transfer requires a "reasonable chance of a significant loss" to the reinsurer. Therefore, the results of the ceding company should not be considered in a risk transfer analysis.

It is important to remember that contract features like profit commissions can still have an indirect impact on risk transfer. This impact on risk transfer stems from how these features may affect other aspects of the contract, most notably the premium. Reinsurance contracts are priced while considering any and all expected payments paid and received by the reinsurer. Any addition of a profit commission clearly increases the amount of future expected payments by the reinsurer to the ceding company and may result in a higher premium for the contract.

In the example analysis for Contract #1, the profit commissions were included in the simulation to demonstrate that they did not affect the reinsurer in any loss scenarios. However, if the contract failed to meet risk transfer requirements, the ceding company and the reinsurer may consider potential changes that would allow the contract to be accounted for as reinsurance. One potential change would be to eliminate or reduce the profit commissions with a corresponding decrease in

premium. This change in premium may result in the contract meeting risk transfer requirements.

Another way profit commissions can affect risk transfer is through carryforwards. Carryforwards may be used in multi-year contracts where the profits or losses from prior years may affect the results of the future years. A contract for periods of more than one year usually requires further testing for risk transfer and any carryforwards that may impact a loss position for the reinsurer would need to be incorporated into the model. Carryforwards can also be used in one-year contracts where the primary company and reinsurer agree to terms each year and at that time choose whether or not results will be carried forward. In this case each contract renewal may require a specific analysis. If there is a carryforward from a previous year that would affect results when there is a loss for the reinsurer, then it must be incorporated into the cash flow model. However, when considering one-year contracts with no impact from prior carryforwards there is no need to incorporate potential future carryforwards since they have no impact on the contract being reviewed.

3.2.2 Reinsurer Expenses

Only cash flows between the ceding company and the reinsurer should be considered in a risk transfer analysis. According to SSAP 62, "The evaluation is based on the present value of all cash flows between the ceding and assuming enterprises under reasonably possible outcomes." This means that broker expenses, operating expenses, fees related to letters of credit, and taxes should bear no impact on the analysis. As can be seen in the Appendices, the analyses of the example contracts did not incorporate any of these expenses that did not result in a cash flow between the reinsurer and the ceding company.

3.2.3 Interest Rates and Discount Factors

SSAP 62 requires a constant interest rate to be used for discounting across all simulated scenarios. The interest rate should not vary by scenario because risk transfer analysis should only consider insurance risk. Non-insurance risks such as investment risk, currency risk, and credit risk should not be included. The AAA Practice Note interprets this to also mean that the same interest rate should be applied to all cash flows, including premiums and losses.

SSAP 62 only requires the selection of the interest rate to be reasonable and appropriate. The AAA Practice Note recommends the risk free rate as a reasonable choice. This is not necessarily a conservative selection. Because the risk free rate is commonly below a reinsurer's expected

investment returns, it will actually result in higher projected present valued losses. However, the investment abilities of the reinsurer should not affect the presence of risk transfer, so the risk-free rate is a consistent and reasonable selection for the analysis. The selection of other interest rates is considered later in the paper.

SSAP 62 states that a reasonable and appropriate interest rate "generally would reflect the expected timing of payments to the reinsurer and the duration over which those cash flows are expected to be invested by the reinsurer." Therefore the duration used to select an interest rate should be based on the net cash flows to the reinsurer.

There has been a lot of guidance on interest rate selection and there is very little room for deviation from the use of a constant interest rate in all risk transfer analyses. However, in the selection of the interest rate the accounting standards do not prescribe a set framework and note that judgment is involved. While using a risk-free rate with duration equal to that of the reinsurers net cash flows is recommended, a selected rate could still be considered a "reasonable and appropriate rate".

Page 4 of Appendix A provides an example of calculating a duration using loss and premium payments and then selecting a risk-free rate based on that duration. To get the duration of the net cash flows we performed two duration calculations. First we determined the duration of the premium payments. This was straight forward since the premium payment schedule is laid out in the contract. Next the loss duration is calculated using an industry payment pattern. The duration of the net cash flows is then the difference between the two. This calculation may not be exact, but it is a good approximation of the "duration over which those cash flows are expected to be invested by the reinsurer," as the standard requires. The calculated duration of net cash flows was then used to select an interest rate based on the years of maturity and yield curve rates from the U.S. Treasury in Columns (7) and (8). This interest rate was used in the analysis for Contract #1.

For Contract #2 an interest rate was selected with consideration given to the current risk-free rates and longer expected payment pattern for an excess of loss contract.

3.2.4 Premiums

The premium paid by the ceding company is one of the most significant inputs when determining if risk transfer is present. When using the "10-10" rule or ERD all potential loss situations are going to be compared against the premium to calculate a percent of loss. While its importance is clear, what the premium should include is not nearly as straightforward.

First, the premiums used in risk transfer analysis should be gross premiums. This is specifically pointed out in SSAP 62. Gross premiums entail all premium paid to the reinsurer before the consideration of any payments back such as a ceding commission.

When making comparisons against premium to determine a reinsurer's profit or loss, it is required that the present value of the premium be used. Reinsurance contracts often lay out specific payment plans for premium. The same interest rate used to discount losses should be applied to calculate the present value of the premium. While the risk transfer analysis is a present value calculation, it is important to model the actual functioning of the contract. This means that the application of the loss ratio caps and experience adjustments are based upon the nominal premium and loss amounts. As shown in Appendix A, the loss ratio cap in Contract #1 is applied to nominal losses and premiums in the simulation. The discounting of premium and losses happens after the contract losses and premiums are determined and any caps or experience based features are applied.

When the premium of a reinsurance contract is dependent upon future events, using the proper premium in a cash flow simulation is slightly more complicated.

There are a number of premiums that could be considered for this purpose. The initial deposit premium is an intuitive and simple choice, but it does not account for future payments from the ceding company to the reinsurer and could therefore be easily manipulated. The other options are to use an expected premium or the actual premium in each scenario.

The use of expected premiums may also seem intuitive, but can be troublesome as well. The most significant concern with using expected premiums is the potential over detection of risk transfer. When premium is dependent upon loss experience, the highest premium levels often occur when the loss experience is the poorest and the reinsurer's losses are at their highest. If the reinsurer's percent of loss is calculated using an average expected premium, it is likely that the resulting reinsurer loss percentage will be a larger negative value than what is actually possible. Because of this it is imperative that actual premiums are developed along with the losses for each scenario and that each scenario has a corresponding percent of reinsurer loss developed. From these simulated results, percentiles and values such as ERD can be calculated.

It is not uncommon for a reinsurance contract to include fees other than premium. When there are fees that depend upon future events, the impact of these events should be included in the model. If it is not possible to include certain events in the model, a general assumption about their impact on any future cash flows may be necessary. The conservative decision would be to include all fees

that the ceding company may be required to pay to the reinsurer. There is an example of this in Contract #2, which requires a fee to delay mandatory commutation of the contract after five years. In the example it is assumed that the primary company will not want to commute the contract and reassume the risk after five years and therefore will be required to pay a fee of $50,000. When this type of fee is expected to occur, it should be considered as premium in any calculation of reinsurer loss. While the fee may be entirely administrative and related to the reinsurer's claim handling costs, any cash flows from the ceding company to the reinsurer should be considered as premium. If this were not the case, the determination of risk transfer could be manipulated based upon the labeling of certain cash flows as premiums or fees.

3.2.5 Evaluation Date

The date used in risk transfer analysis will likely only be used in the selection of an interest rate or in determination of how much was known about potential losses when the contract was entered into. SSAP 62 states that "risk transfer assessment is made at the inception date based on facts and circumstances known at the time." Therefore any parameters that may be affected by the date at which they were determined should be considered from the time of the contract's inception. The contract inception date is the date the contract comes into force, or the original effective date. According to SSAP 62 it is not necessary to retest for risk transfer at every renewal unless there are any significant amendments made to the treaty. If a contract is tested at inception, the results of that test are unlikely to change. In the case of an amendment that makes a material change to the amount of risk being transferred, the amendment date should be treated as the inception date of the contract and the contract should be reviewed again for risk transfer.

3.2.6 Commutations and Timing of Payments

According to SSAP 62, any reinsurance contracts that have prescribed payment patterns do not meet the risk transfer requirements. In order to have risk transfer in a reinsurance contract, there must be timing risk as well as underwriting risk. Prescribed payment plans remove the timing risk necessary for risk transfer. In order for the contract to contain timing risk the reinsurer must make "timely reimbursement payments."

Contracts with commutation clauses may still meet risk transfer requirements, but to the extent they affect the cash flows between the ceding company and reinsurer, they must be modeled. If a fee is required to avoid an early forced commutation, this fee should be considered as part of the expected premium paid. If the commutation decision is unilateral, it may be necessary to

incorporate the commutation decision into the model based on economically rational decision making. To the extent the commutation clause impacts the payment pattern, this too should be considered in the cash flow model.

3.3 Practical Considerations

This section is meant to highlight a number of practical considerations that commonly appear in risk transfer analyses and have not been thoroughly addressed in the current literature. While not all of these practical considerations have obvious solutions, we hope to shed some light on the available options and open the door for further discussion on the topics.

3.3.1 Parameter Selection

One of the first and most important steps in performing a cash flow simulation for risk transfer analysis is choosing the parameters. Any parameters that are not given by the contract must be selected after some contemplation. This includes the interest rate, payment pattern, and any loss distributions used for projecting cash flows.

3.3.2 Interest Rate

Making the appropriate interest rate selection was previously addressed in the Common Pitfalls section. Using a risk-free rate based upon a duration calculation and the expected premium and loss payments is recommended by the AAA Practice Note. It is also required by the accounting standards that the same rate be used throughout the analysis.

While the risk-free rate is recommended, there are other possibilities to consider. It is difficult to envision a scenario were it would be reasonable to use an interest rate that is lower than the risk-free rate. This may seem conservative, but using a lower interest rate would lead to higher losses at present value and could result in over-detecting risk transfer. It is also difficult to construct an argument for why a company would not have the risk-free rate available to them. Therefore, it seems reasonable to treat the risk-free rate as the lowest possible choice, or floor, when selecting an interest rate.

A better argument could be made for selecting an interest rate above the risk-free rate. The most logical argument is that the reinsurer in the contract has a higher expected return on investments and this expected return should be used when determining if they face a "reasonable chance of a significant loss." While this argument is intuitive, it does have its flaws. First, this is not likely an

available parameter if the risk transfer analysis is being done on behalf of the ceding company. Next, if a reinsurer's expected investment returns are used in the risk transfer analysis, it will create the situation where a contract may be found to exhibit risk transfer for a reinsurer with poor investment strategy, but be found not to transfer risk for a reinsurer with superior investment strategies. This type of counter-intuitive result is also why cash flows that are not between the ceding company and the reinsurer are not considered.

Based on these considerations it is difficult to construct an argument for using anything that is not at least loosely based upon the risk-free rate. For consistency and to provide support for the interest rate selected, it may be worthwhile to base the selection on the treasury yields available at the inception date of the contract and the expected duration of the cash flows, as was done in the example for Contract #1. This approach is consistent with the recommendation from the AAA Practice Note. However, depending on the situation and in an effort to keep an analysis simple, it may also be just as reasonable to select an appropriate approximation of the current risk-free rate, as was done in the example for Contract #2.

An alternative to selecting a duration-matched interest rate, which has been used by some practitioners, is the selection of a constant yield curve. Use of a yield curve is common in company planning and in making economic decisions on contracts. However, the use of yield curves in risk transfer analysis does not appear to be consistent with the accounting standards. The AAA Practice Note finds that SSAP 62 requires, "that a single interest rate be used to present-value the cash flows."

A constant yield curve would generally result in a more stringent risk transfer analysis since interest rates tend to be higher at longer durations. The typical yield curve would lead to more discount being applied to losses in comparison to the premiums, which are often paid much quicker. While the use of a yield curve may seem like an improvement to the analysis, the language in the accounting standards clearly leads to a similar conclusion to the AAA Practice Note. Both standards refer to the use of "a constant interest rate," through all cash flow scenarios. The intent of the standards appears to be that interest rate risk should not be incorporated in the model. Thus, an interest rate that varies by scenario is not allowed. Capturing interest rate risk is not the intent of incorporating a yield curve into the analysis. A constant yield curve across all scenarios would only result in a different interest rate when the timing of the cash flows differed, which reflects risk due to the timing of losses and premiums, not the interest rate. However, the use of a yield curve to discount cash flows would result in a different effective interest rate when no losses are paid

compared to a situation where significant losses are paid. This appears to violate the requirement in SSAP 62 that the "same interest rate shall be used to compute the present value of cash flows for each reasonable possible outcome tested."

3.3.3 Payment Pattern

Payment patterns are often based on previous experience for the ceding company or industry benchmarks or both. While this can be a simple parameter to select, it is important to remember that there is uncertainty involved in the payment pattern. While this risk is more difficult to measure than the risk involved in a loss distribution, the timing of payments can play a significant role in the amount of risk transferred. For example, when a constant payment pattern is applied to a loss distribution, the results will not recognize the potential impact of quicker than expected payments. This will have the most significant impact on the tails of the distribution, which is often the portion we are the most interested in for determining risk transfer. While introducing variability into a payment pattern may be too complicated for the benefit it provides, it is important to at least consider this risk as you complete your analysis.

3.3.4 Loss Distribution

Loss distributions are often based on previous company experience, industry benchmarks, pricing information, or judgment, or all of these factors. For transactions covering large books of business with several years of historical experience available, selecting a loss distribution can be as easy as fitting a distribution to the available data. For books of business with low premium volume or immature loss experience, selecting the appropriate distribution can be much more difficult. Even for mid-size books of business it can be difficult to select a loss distribution because risk transfer testing focuses on the right tail of the distribution. This concern is compounded when working with high-level excess of loss contracts. However the loss distribution is determined, it is important to test the reasonableness of the tail results. Having an adequate comfort level with the tail results produced by the selected distribution is crucial.

When a company does not have enough historical loss experience to base a distribution upon, it is typical to turn to industry benchmarks or the information used to price the reinsurance contract. The use of pricing assumptions in risk transfer analyses is discussed later in the paper. Industry data can provide a starting point for overall expected loss ratios or frequencies and severities. However, it is difficult to select a distribution and develop a variance using only industry results. Individual companies can experience significantly higher variance in their loss than the industry as a whole. In

these instances it may be necessary to rely on some generally accepted distributions. Likewise a selected variance will be required. This selection will depend on a number of considerations, such as the size of the book of business, the type of coverage, the type of business being underwritten, and a variety of other factors.

3.3.5 Parameter Risk

A key consideration for any simulation model is parameter risk. Cash flow simulations for risk transfer are no different. As we previously discussed, selecting parameters to simulate future loss payments is a difficult process and it is important to account for the risk that the selected parameters or model are incorrect. Accounting for this increased variability in your simulation will increase the likelihood that your analysis will determine risk transfer is present. This is a reasonable result when you consider that the reinsurer is clearly accepting this same parameter risk when entering into the contract.

Parameter risk can be accounted for explicitly or implicitly. Implicitly it can be reflected in a slightly higher expected loss selection or in an increase to the expected volatility of losses. In the case of explicit recognition it is common to see a probability distribution assigned to key parameters and then to have them simulated also. This provides some variability to the selected parameters to help account for parameter risk. While this is a more concrete method than including it implicitly, it also depends on judgment and the selection of more distributions and parameters. There is not much information available about incorporating parameter risk into cash flow simulation models. Currently, there are no widely accepted methods and the costs of more complicated techniques may tend to outweigh the benefits.

Parameter risk is going to have the greatest impact on the losses simulated, but it can affect other facets of the analysis as well. When premium projections must be estimated based on the treaty terms, there is some additional parameter risk, but it will rarely affect the result of the analysis. There is also parameter risk in the discounting function used in the analysis. However, not all of that risk should be accounted for in a risk transfer analysis.

The majority of the parameter risk in discounting comes from two key inputs, the payment pattern and the interest rate. As we previously discussed, there is real risk in not incorporating an accurate payment pattern. This risk relates to timing risk, which is a part of insurance risk and should be considered in a risk transfer analysis. The second piece of the discount, the interest rate, however, should not contribute any risk, parameter or process, to the analysis. SSAP 62 clearly

states that "the possibility of investment income varying from expectations is not an element of insurance risk."

Because there are no widely accepted methods and because the methods available either require some arbitrary selections or may add more cost than benefit to the analysis, we do not feel that parameter risk must be explicitly shown in a risk transfer analysis. We would strongly encourage practitioners to at least include it implicitly if not explicitly. Regardless, we recommend documenting the existence of parameter risk and, whether or not it is included in the analysis, documenting how it could affect the results. This documentation can be beneficial if another actuary needs to review the analysis. More importantly, parameter risk is too important to entirely exclude from both the analysis and the report when the analysis may be directly used to make the decision on risk transfer.

3.3.6 Use of Pricing Assumptions

One potential resource, if available, for selecting parameters for small or immature books of business is the reinsurance pricing assumptions. This concept is very attractive since a properly priced reinsurance agreement is likely to be based on an appropriate expected loss assumption with an appropriate risk load and payment pattern. While we are often more interested in a loss distribution than just the expected losses for testing risk transfer, these assumptions can help provide some of the necessary parameters for our simulation.

Pricing assumptions can also be helpful in parameter selection since they reflect how risky the market views a particular piece of business. The reinsurance market may provide a better indication of the amount of risk involved in a small new primary company searching for reinsurance than what you could find based on industry benchmarks. Of course, this market-driven view of a reinsurance contract is also one of the biggest drawbacks to using pricing assumptions. Simulation testing for risk transfer should be based on expected loss experience and should not be market-driven. Pricing assumptions should only be used in selecting parameters when reasonable. A hard insurance market with higher premiums does not mean that companies do not need to meet the same risk transfer standards. Because of this, when available, the underlying data that the pricing assumption was based upon can be even more beneficial than the parameters actually used in the pricing of the reinsurance.

To correctly apply the expected loss assumptions from a pricing model to a risk transfer analysis, it is important to properly account for the risk load in the pricing. In many reinsurance contracts,

risk load is a significant piece of the puzzle. It may be implicitly added into the expected loss ratio or explicitly stated in the development of the rate. If it is implicit in the expected losses, it is important not to blindly carry forward the expected losses without recognizing the extra loaded amount. If it is explicitly stated, intuitively there should be a relationship between this risk load amount and the level of risk inherent in the underlying coverage. While this risk load reflects the amount of variability the reinsurer anticipates in the contract, it is not easy to translate this load into a variance for your loss distribution. However, it is worthwhile to at least consider the size of this risk load when selecting the loss distribution and variance.

Another caveat to remember when using pricing information to select parameters for risk transfer testing is that while both practices are generally aimed at determining expected future losses, they both are doing so for very different reasons. The differences in intent can lead to different approaches and selections. Notably, when pricing a reinsurance contract, it might be considered prudent to make conservative selections. This might lead to slightly higher expected losses and risk load. These selections would not be considered conservative in a risk transfer analysis. Selecting higher expected losses and increasing the expected variability would lead to over-detecting risk transfer. For risk transfer testing the more conservative approach would be to use lower expected losses and variability. These differences in approach are important to remember anytime you are relying on assumptions from an analysis developed for a different purpose.

While pricing assumptions can clearly provide valuable input to any risk transfer analysis, it should also be clear that there are variety of reasons one may deviate from them. This is true even for reinsurance analysts who may be testing the same contracts they priced. These two exercises might require different assumptions about the modeled losses. Loss models used for pricing are often optimized based on their projections of all the potential results. Risk transfer, on the other hand, requires a model that is optimized on the right tail of the distribution. Due to this distinct difference in focus, the resulting selections for loss distribution and/or parameters may not be the same for pricing and risk transfer analysis.

3.3.7 Commutation Clauses

As previously discussed, any mandatory fees to delay a required commutation should be included when determining if risk transfer is present. Commutation clauses should be read carefully to determine their entire impact on risk transfer. While commutation clauses do not often prohibit a contract from exhibiting risk transfer, it is important to recognize that any commutation requirement

does restrict the amount of risk transferred. It is not uncommon for these clauses to set a predetermined date for commutation based on an actuarial determination of the unpaid claim estimates at that time. While this is a fair method for completing a commutation, it does require the ceding company to reassume the risk of any changes in the unpaid claims after the predetermined commutation date. This clearly returns some risk back to the ceding company, limiting the amount of risk transferred in the original transaction.

If a commutation clause states that the future commutation will be based on a mutually agreed upon value or on an actuarial determination, the payment pattern used to discount losses in the risk transfer analysis may not need to be adjusted. While the commutation may result in an earlier payment than anticipated by the reinsurer for any outstanding claims, the payment should reflect the present value of expected payments at that time and the impact on the original payment pattern assumption should be minimal. If there are explicit rules for the calculation of the value of outstanding claims at commutation, these rules may need to be included in the original analysis and may affect the selected payment pattern.

4. CONCLUSIONS

It is important to remember that none of the methods to test risk transfer provide a "bright line" indicator for its existence. While actuaries have the necessary skill set to evaluate the existence of risk transfer in any reinsurance contract, the final decision belongs to the CEO or CFO of the company. Risk transfer analysis, and more specifically ERD, is a tool to aid them in that decision. If a risk transfer analysis produces a borderline result, such as an ERD of 0.95% or 1.05%, it will likely require further consideration and documentation to show that risk transfer does or does not exist in the contract being reviewed. Risk transfer testing is a principle-based exercise and the existence of risk transfer is entirely based upon there being a "reasonable chance of a significant loss" to the reinsurer. ERD and other methodologies are just tools to help determine if a contract meets this standard.

Acknowledgment

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Abbreviations and notations

AAA, American Academy of Actuaries
ERD, Expected Reinsurer Deficit
RAS, Reinsurance Attestation Supplement
CAS, Casualty Actuarial Society
FAS 113, Financial Accounting Standard No. 113
SSAP, Statement of Statutory Accounting Principles

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ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis

Table 1 - Summary of Terms - Contract #1

Inception Date	1/1/2008
Estimated Subject Premium	10,000,000
Reinsurance Premium	8,000,000
Cession	80.0%
Ceding Commission	25.0%
Profit Commission	
Loss Ratio	66.0%
Profit Swing	5.0%
Loss Ratio Cap	100.0%
Reinsurers Expenses as % of Prem.	
Brokerage	*2.0%*
Underwriting Exp.	*2.0%*
Federal Excise Taxes	*1.0%*

Table 2 - Simulation Assumptions

Model Loss Ratio excluding ALAE	
Lognormal distribution	
Mean	65.0%
Standard Deviation	20.0%
Minimum Loss	45.0%

Table 3 - Results

Frequency	Sum of Col (10) / 10,000	19.7%
Severity	Sum of Col (9) / Sum of Col (10)	-14.5%
ERD as a % of Reins Prem.	ERD / Reinsurance Premium	-2.85%

Table 4 - Percentiles

Percentile	Loss Ratio	NPV Of Reinsurer Profit / Loss
75%	95.9%	4.1%
80%	99.7%	0.3%
90%	110.5%	-10.5%
95%	118.5%	-18.5%

Iteration #	Direct Loss and LAE Ratio (1)	Direct Losses and LAE (2)	Ceded Losses and LAE (3)	NPV Treaty Losses (4)	Ceding Commission (5)	Profit Commission (6)	NPV Treaty Premium Net of Ceding & Profit Comm (7)	NPV Reinsurer Gain/Deficit (8)	NPV Reinsurer Deficit as a % of NPV of Treaty Premium (9)	Frequency of Deficit (10)
1	63%	6,342,599	5,074,079	4,649,828	2,000,000	164,736	5,724,700	1,074,871	0.0%	0
2	58%	5,792,740	4,634,192	4,246,721	2,000,000	320,000	5,578,412	1,331,691	0.0%	0
3	52%	5,175,628	4,140,502	3,794,309	2,000,000	320,000	5,578,412	1,784,103	0.0%	0
4	45%	4,500,000	3,600,000	3,298,999	2,000,000	320,000	5,578,412	2,279,413	0.0%	0
5	45%	4,500,000	3,600,000	3,298,999	2,000,000	320,000	5,578,412	2,279,413	0.0%	0
6	80%	7,973,888	6,379,111	5,845,744	2,000,000	0	5,879,913	34,169	0.0%	0
7	45%	4,500,000	3,600,000	3,298,999	2,000,000	320,000	5,578,412	2,279,413	0.0%	0
8	53%	5,307,827	4,246,262	3,891,226	2,000,000	320,000	5,578,412	1,687,186	0.0%	0
9	69%	6,928,552	5,542,842	5,079,397	2,000,000	0	5,879,913	800,516	0.0%	0
10	45%	4,500,000	3,600,000	3,298,999	2,000,000	320,000	5,578,412	2,279,413	0.0%	0
9,990	48%	4,783,431	3,826,745	3,506,785	2,000,000	320,000	5,578,412	2,071,627	0.0%	0
9,991	113%	11,284,849	9,027,879	7,331,108	2,000,000	0	5,879,913	-1,451,196	-24.7%	1
9,992	55%	5,470,802	4,376,642	4,010,705	2,000,000	320,000	5,578,412	1,567,707	0.0%	0
9,993	86%	8,606,365	6,885,092	6,309,420	2,000,000	0	5,879,913	-429,507	-7.3%	1
9,994	122%	12,230,549	9,784,439	7,331,108	2,000,000	0	5,879,913	-1,451,196	-24.7%	1
9,995	54%	5,350,772	4,280,618	3,922,709	2,000,000	320,000	5,578,412	1,655,703	0.0%	0
9,996	91%	9,128,508	7,302,806	6,692,208	2,000,000	0	5,879,913	-812,295	-13.8%	1
9,997	81%	8,050,084	6,440,067	5,901,604	2,000,000	0	5,879,913	-21,691	-0.4%	1
9,998	106%	10,578,897	8,463,117	7,331,108	2,000,000	0	5,879,913	-1,451,196	-24.7%	1
9,999	79%	7,892,701	6,314,161	5,786,225	2,000,000	0	5,879,913	93,688	0.0%	0
10,000	83%	8,319,856	6,655,885	6,099,377	2,000,000	0	5,879,913	-219,464	-3.7%	1

Column
(1) Based upon the model assumptions in Table 2
(2) Estimated Subject Premium x Col (1)
(3) Cession Percent x Col (2)
(4) Minimum of Col (3) or Loss Ratio Cap x Reinsurance Premium, multiplied by Page 3 Col (2)
(5) Reinsurance Premium x Ceding Commission
(6) 1% for every 1% of ultimate loss that is lower than 66%, maximum adjustment 5%
(7) Total Page 2 Col (6) + Col (6) / [(1 + Discount Rate)^2.0833], assumes profit commision is paid 2 years one month after policy effective date
(8) Col (7) - Col (4)
(9) If Col (8) < 0 then Col (8) / Col (7) else 0
(10) If Col (8) < 0 then 1 else 0

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Premium Discount Factor - Exclude Profit Share

Discount Rate Assumption:

(1)	Interest Rate	2.9%
(2)	Discount Factor	0.980

Time of Payments in Months (3)	Premium (4a)	NPV of Premium (4b)	Ceding Commission (5)	Premium Net of Ceding Commission (6)	Discounted Premium Net of Ceding Commission (7)
4	2,000,000	1,981,032	-500,000	1,500,000	1,485,774
7	2,000,000	1,966,925	-500,000	1,500,000	1,475,193
10	2,000,000	1,952,917	-500,000	1,500,000	1,464,688
13	2,000,000	1,939,010	-500,000	1,500,000	1,454,257
Total	8,000,000	7,839,884	-2,000,000	6,000,000	5,879,913

Column/Row	Note
(1)	Page 4, Row (12)
(2)	Total Col (7) / Total Col (6)
(3)	Month premium is due, assumes quarterly payments due one month after quarter end.
(4a)	Reinsurance Premium divided by 4, assumes quarterly payments.
(4b)	Col (4a) / {[1 + Col (1)] ^ (Col (3) / 12)}
(5)	Ceding Commission divided by 4, assumes quarterly payments.
(6)	Col (4a) + Col (5)
(7)	Col (6) / {[1 + Col (1)] ^ (Col (3) / 12)}

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Discount Factor

Discount Rate Assumption:

(1)	Interest Rate	2.9%
(2)	Discount Factor	0.916

Years of Maturity	% of Ultimate Paid Cum.	Incr.	Discounted Payment
(3)	(4)	(5)	(6)
0	0.00%	0.00%	0.00%
1	20.00%	20.00%	19.72%
2	42.00%	22.00%	21.08%
3	60.00%	18.00%	16.76%
4	70.00%	10.00%	9.05%
5	77.50%	7.50%	6.59%
6	82.00%	4.50%	3.85%
7	90.00%	8.00%	6.64%
8	95.00%	5.00%	4.04%
9	100.00%	5.00%	3.92%

Column/Row	Note
(1)	Page 4, Row (12)
(2)	Sum Col (6) / Sum of Col (5)
(4)	Industry Benchmarks
(5)	Current (4) - prior (4)
(6)	Col (5) discounted to time zero

ACME Insurance
Quota Share
Risk Transfer - Simulation Analysis
Interest Rate

Years of Maturity	% of Ultimate Losses Paid Cum.	% of Ultimate Losses Paid Incr.	Time of Payments in Months	% of Ultimate Premiums Paid Cum.	% of Ultimate Premiums Paid Incr.	Daily Treasury Years of Maturity	Daily Treasury Yield Curve Rates
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	0.00%	0.00%	4	25.00%	25.00%	0.5	3.32%
1	20.00%	20.00%	7	50.00%	25.00%	1.0	3.17%
2	42.00%	22.00%	10	75.00%	25.00%	2.0	2.88%
3	60.00%	18.00%	13	100.00%	25.00%	3.0	2.89%
4	70.00%	10.00%				5.0	3.28%
5	77.50%	7.50%				7.0	3.54%
6	82.00%	4.50%				10.0	3.91%
7	90.00%	8.00%					
8	95.00%	5.00%					
9	100.00%	5.00%					
10	100.00%	0.00%					

(9)	Duration of Loss Payments	3.14
(10)	Duration of Premium Payments	0.71
(11)	Duration of Net Cash Flows	2.43
(12)	Selected Interest Rate	2.9%

Column/Row	Note
(2)	Page 3 Column (4)
(3)	Page 3 Column (5)
(4), (5), (6)	Based on premium payments on Page 2
(8)	Rates from U.S. Treasury Securities as of 1/2/08
(9)	Based on loss payment pattern in Column (3)
(10)	Based on premium payment pattern in Column (6)
(11)	Row (9) - Row (10)
(12)	Selected

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis

Table 1 - Summary of Terms - Contract #2

Inception Date	1/1/2008
Estimated Subject Premium	10,000,000
Provisional Reinsurance Rate	8.50%
Provisional Premium	800,000
Maintenance Fee	50,000
Retention	250,000
Limit	250,000
Swing Rate	
Swing Loss Ratio	75.0%
Minimum Rate	6.00%
Maximum Rate	11.00%
Reinsurers Expenses as % of Prem.	
Brokerage	*10.0%*
Underwriting Exp.	*7.0%*
Federal Excise Taxes	*1.0%*
Modeled Loss Ratio	120.0%

Table 2 - Simulation Assumptions

Model Severity ALAE		Model Frequency	
Lognormal distribution		Poisson distribution	250
Mean	30,000		
Standard Deviation	120,000		
Minimum Loss	0		

Table 3 - Results

Frequency	Sum of Col (10) / 10,000	10.4%
Severity	Sum of Col (9) / Sum of Col (10)	-20.1%
ERD as a % of Reins Prem.	ERD / Reinsurance Premium	-2.09%

Table 4 - Percentiles

Percentile	NPV Of Reinsurer Loss
75%	0.0%
80%	0.0%
90%	-1.0%
95%	-16.5%

Claim #	Direct Loss and LAE (1)	Ceded Loss and LAE (2)	NPV Ceded Loss and LAE (3)	Provisional Premium (4)	Experience Adjustment (5)	Commutation Fee (6)	Final Premium and Fees (7)	NPV Treaty Premium Net of Rate Swing (8)	NPV Reinsurer Gain/Deficit (9)	NPV Reinsurer Deficit as a % of NPV of Treaty Premium (10)	Frequency of Deficit (11)
1	1,758	0	0	800,000	250,000	50,000	1,100,000	1,056,133	204,656	0.00%	0
2	3,566	0	0								
3	2,762	0	0								
4	15,271	0	0								
5	5,648	0	0								
6	11,158	0	0								
7	39,765	0	0								
8	326,745	76,745	68,050								
9	36,936	0	0								
10	10,469	0	0								

Column

(1) Based upon the model assumptions in Table 2
(2) Ceded loss based upon the treaty terms
(3) Col (2) x Appendix B, Page 3
(4) Estimated subject premium times provisional reinsurance rate
(5) Actual modeled loss ratio minus swing loss ratio + provisional reinsurance rate; subject to Maximum and Minimum rate
(6) Assumes fee to commute under all scenerios
(7) (4) + (5) + (6)
(8) Page 2 Col (4b) + Col (5) / [(1 + Interest rate) ^ 2.0833] + Col (6) / [(1 + Interest rate) ^ 5.0833]
(9) Col (8) - sum of Col (3)
(10) If Col (9) < 0 then Col (9) / Col (8) else 0
(11) If Col (9) < 0 then 1 else 0

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis
Premium Discount Factor - Exclude Profit Share

Discount Rate Assumption:

(1)	Interest Rate	3.5%
(2)	Discount Factor	0.976

Time of Payments in Months (3)	Premium (4a)	NPV of Premium (4b)
4	200,000	197,720
7	200,000	196,027
10	200,000	194,348
13	200,000	192,684
Total	800,000	780,778

Column/Row	Note
(1)	Selected
(2)	Total Col (4b) / Total Col (4a)
(3)	Month premium is due, assumes quarterly payments due one month after quarter end
(4a)	Reinsurance Premium divided by 4, assumes quarterly payments
(4b)	Col (4a) / {[1 + Col (1)] ^ (Col (3) / 12)}

ACME Insurance
Excess of Loss
Risk Transfer - Simulation Analysis
Discount Factor

Discount Rate Assumption:

(1)	Interest Rate	3.5%
(2)	Discount Factor	0.887

Years of Maturity	% of Ultimate Paid Cum.	Incr.	Discounted Payment
(3)	(4)	(5)	(6)
0	0.00%	0.00%	0.00%
1	19.27%	19.27%	18.94%
2	42.02%	22.75%	21.61%
3	58.15%	16.13%	14.80%
4	68.72%	10.57%	9.37%
5	75.41%	6.69%	5.73%
6	79.71%	4.29%	3.55%
7	82.97%	3.27%	2.61%
8	85.24%	2.27%	1.76%
9	87.01%	1.76%	1.32%
10	88.41%	1.40%	1.01%
11	95.50%	7.09%	4.94%
12	100.00%	4.50%	3.03%
13	100.00%	0.00%	0.00%

Column/Row	Note
(1)	Selected
(2)	Sum Col (6) / Sum of Col (5)
(4)	Industry workers compensation benchmarks
(5)	Current (4) - prior (4)
(6)	Col (5) discounted to time zero

GOVERNMENT INSURERS STUDY NOTE
APRIL 2017

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INTRODUCTION

Nyce [1] provides an excellent introduction to government insurance including the five main reasons for government insurance, which are summarized in this study note.

Both the federal and state governments are involved in insurance as regulators of insurance companies and as insurers. As insurers, they participate in a number of insurance programs either as the sole insurer, in partnership with insurance companies or in competition with insurance companies. Several major programs that are discussed elsewhere in the syllabus include the National Flood Insurance Program, Social Security, Guaranty Funds, FAIR plans, TRIA, and various state Auto Plans. In this study note, we will discuss state and federal involvement in Workers Compensation Insurance, Crop Insurance, and Unemployment Insurance.

Is government participation in insurance necessary? According to Greene and Weining, there are several reasons for government participation in insurance:

- Filling insurance needs unmet by private insurance
- Compulsory purchase of insurance
- Convenience
- Greater efficiency
- Social purposes

Filling Insurance Needs Unmet by Private Insurance

According to Nyce [1] and Greene [2], one justification for government participation in insurance is the residual market philosophy, with governments offering insurance in markets unserved by private insurance; either because of unavailability or affordability. One implication of the residual market philosophy is that government requirements for insurability are different from private insurers' requirements. A government may step into situations in which private insurers do not because the government has the financial capacity to subsidize losses, either by directly taxing taxpayers for the insurance program even those who do not benefit from the program, or indirectly by charging less than the actuarial cost of providing insurance coverage for the exposure and making up the difference through government-provided funds (crop / flood). There are strong

arguments, both pro and con, as to whether a government should provide this type of subsidy.

Begun in 1968, the Federal Crime Insurance Program was intended to provide coverage for homeowners and small businesses located in neighborhoods with high crime rates, primarily because private insurance for burglary or robbery was not available at affordable rates for these risks. With proper loss prevention methods, this insurance was available from the private market at rates less than the government rates and the Federal Crime Insurance Program expired in 1995.

Crop insurance and Flood insurance are available and affordable only because of subsidies from the federal government.

Compulsory Purchase of Insurance

Government may require individuals or businesses to obtain insurance to meet social responsibilities. A driver who causes an automobile accident is responsible for repairing the damage or injury caused by the accident. Many people would not have the financial resources to meet this obligation without insurance protection. An employer is deemed responsible for injury to an employee regardless of fault. Again, without insurance protection an employer may not be able to meet this obligation. Without a compulsory insurance requirement, some persons who have suffered injury or loss may not have the costs of repairing the damage to their property or their medical costs covered by the person responsible for these costs.

Since purchase of insurance such as workers compensation or automobile insurance may be compulsory, some state legislatures felt obliged to offer the insurance to individuals who could not find a private market [2]. The workers compensation state funds established in several states and the Maryland Automobile Insurance Fund are examples of this philosophy. Another reason why some federal and state legislators believe that government should provide compulsory insurance is that private companies should make only limited profits, given the government guaranteed market. A government program would operate as a not-for-profit entity and the cost of the compulsory insurance would be lower than if offered by a for-profit insurer. In other non-insurance government mandated programs such as highway construction contracts, private organizations often service the program. Within a purely competitive market excessive profits cannot persist in the long run. Private insurance seems to work for most states in supplying the vast majority of the public with compulsory insurance such as workers compensation and auto insurance.

While workers compensation insurance is administered by a monopolistic state fund in a few states, most states have private companies that offer workers compensation insurance, sometimes in competition with state-run funds that will provide coverage to anyone who applies for coverage to the fund, sometimes referred to as “take all comers.” For those states without a state fund, and some with a state fund, there is usually some

other form of residual market that provides coverage to those who are unable to find the required coverage with a private insurer.

For compulsory auto insurance, government insurance is normally not the answer; so provisions are in place to make auto insurance available for those unable to buy insurance on the open market. Sometimes these alternate sources also provide the coverage at costs below the actuarial cost of providing the coverage. In these situations, insurers, other insureds or taxpayers subsidize part of the cost of the coverage for high risk drivers. Hamilton and Ferguson [3] discuss these provisions, which include assigned risk plans, reinsurance facilities, and joint underwriting associations depending on the state. Maryland has the only state-owned auto insurance company.

Convenience

Some government insurance programs are established because it appears to be easier for the government to set up a program quickly as a legislature can appropriate funding for the new program, whereas the private market may take longer to find the necessary funding [3]. A government program may also be already set up to provide certain types of services needed by the insurance program. These services include loss mitigation development and funding, as the Florida legislature did when establishing the Florida Hurricane Catastrophe Fund.

Using government insurance programs only for convenience may not be justified if the private market is willing and able to provide a reasonable market.

Greater Efficiency

One argument in favor of government insurance is that there is greater efficiency than in the private market [2]. Some government insurance programs may be established because of the belief that government can provide the service at a lower cost than the private market. However, the costs of providing insurance, including the costs of keeping records, providing consumer education, issuing policies and paying claims, exist even in government insurance programs. Services such as explaining coverages, keeping records, and handling claims questions are still provided by customer service representatives (who must be compensated). The cost savings claimed for government insurance programs might be overstated because other government departments may perform services on behalf of the government insurance entity that are usually performed by insurance companies, including appraising property, administering claims, or making investments.

Social Purposes

The use of government insurance to achieve social purposes may be the main reason for government insurance programs [3]. Some feel that these social purposes can only be fully achieved within government-owned insurance programs. For example, rehabilitation and vocational training of injured workers are important goals of a workers compensation

system and requirements for loss mitigation in catastrophe insurance plans may be more easily accomplished under government insurance programs. Can private insurance programs accomplish the same goals? If Social Security benefits were made available through a welfare program for the truly needy elderly and disabled while pension plans, 401(k)s, life insurance and disability insurance were to be used to fill the needs of others, would adequate protection for retirement and the disabled be available? If building codes and zoning requirements could be altered to prevent construction in flood-prone areas would private insurers be willing to provide flood coverage? In this scenario, government flood insurance would still be needed for existing buildings in the flood zones, but the need for government flood insurance on new construction would be reduced.

Level of Government

The government (either state or federal) can be involved in three levels as either exclusive insurer, partner with private insurers or as a competitor to private insurers.
As an exclusive insurer the government functions as a primary insurer by collecting premiums, providing coverage and paying all claims and expenses. An example of this at the federal level is Social Security and at the state level with some state government-run workers compensation programs.

In partnership with private insurers the government offers reinsurance coverage on specific loss exposures for which the private insurer may retain only a portion of the loss. Examples of this at the federal level are National Flood insurance program, Terrorism Risk Insurance Program and Federal Crop insurance. On the state level this includes several programs to address residual markets where the insured cannot find coverage on the open market. Examples of this are Fair Access to Insurance Requirements (FAIR) plan, Workers Compensation, Windstorm plans and Residual Auto Plans.

In some cases the states operate in direct competition to private insurers such as in the Workers Compensation market in some states.

Detail of the various government insurance plans are provided in this document or in other readings on the Syllabus.

Evaluation of Government Insurance Programs

How well have the federal and state governments performed in providing insurance? According to Greene [2] the questions to be asked are:

- Is the provision of the insurance by the government necessary or does it achieve a social purpose that cannot be provided by private insurance?
- Is it insurance or a social welfare program? Social welfare is designed to provide benefits to qualified people based on demonstrable need for assistance without any payment or contribution by those receiving assistance. These benefits are usually

financed by general tax resources. The public welfare programs are an example of social welfare.

- Is the program efficient, is it accepted by the public?

Based on experience in 2004, 2005 and 2012 how is the Federal Flood Insurance Program performing? The rates don't seem to be actuarially sound; insurance is usually only purchased if required by law or mortgage companies; people who do not buy flood insurance seem to be getting federal disaster assistance. With appropriate rates, enforceable building codes, up-to-date flood maps, and available reinsurance could private insurance companies provide flood insurance?

In the following sections, we will discuss several government insurance programs, how they work, their origin and purpose, and their effectiveness.

CROP INSURANCE

To help farmers recover from the Great Depression and the Dust Bowl, in 1938 the federal government created the Federal Crop Insurance Corporation (FCIC), a wholly owned corporation of the U.S. Department of Agriculture (USDA), to oversee the newly created federal crop insurance program. The initial program, intended to provide farmers protection against low yields, was limited to a few major crops (wheat and corn) in the main producing areas [4] and was not successful due to high costs and low participation by farmers [5]. In 1980, Congress passed legislation that expanded the types of crops covered and the regions of the country in which the federal crop insurance was available. To encourage participation the 1980 Federal Crop Insurance Act also authorized a subsidy of the crop insurance premium. According to the Congressional Research Service, in 2014 farmers paid about 38 percent of the policy premium [6].

In the late 1980's and early 1990's, droughts, and wet and cool growing seasons resulted in Congress passing several disaster bills to assist farmers in recovering from these disasters. These disaster bills were still costly and competed with the insurance program, so in 1994, Congress made participation in the crop insurance program mandatory for farmers to be eligible for payments under price support programs, certain loans and other benefits. In addition, catastrophic coverage became available and the premium for this coverage was completely subsidized.

In 1994, the mandatory participation requirement was repealed, but farmers who accepted other types of benefits were required to purchase crop insurance. Participation in the crop insurance program increased significantly.

Multiple Peril Crop Insurance policies are a public-private partnership. Private insurers market and write crop insurance policies, which generally indemnify farmers if yields fall below a given baseline due to natural causes (drought, heat, cold, fire, wind, or flood). Some policies also provide protection if prices fall below a given level. The RMA sets

the rates for these policies and determines which crops can be insured in different parts of the country. The private insurer services the policies including adjusting and settling any claims resulting from the policies. The RMA acts as a reinsurer, reimbursing the participating insurers for losses in return for a portion of the premium. In addition, the federal government reimburses the private insurance companies for their operating and administrative costs. The premiums paid by farmers are subsidized by the federal government to reduce the cost to farmers and encourage farmers to participate in the program.

A farmer must elect to purchase multi-peril coverage prior to planting. The crop insurance subsidies may encourage farmers to purchase more coverage than they might if they paid the full price. A higher participation in the program provides better protection to farmers and may reduce requests for disaster assistance, but it also increases costs to taxpayers.

The Federal crop insurance program differs from most private insurance programs in that an insurer who participates in the Federal program must sell the coverage to any farmer at the rate set by the Federal government. Because the insurer cannot impose its own underwriting standards, judgment or desired rate level regardless of the risk, the risk sharing agreement between the federal government and insurance companies allows an insurer to transfer some liability associated with riskier policies to the government and retain profits or losses on less risky policies.

Some private insurers offer crop-hail insurance which is not part of the federal program. Unlike the multi-peril coverage, a crop-hail policy may be purchased at any time during the growing season. Many farmers purchase this coverage because hail can totally destroy a planted field.

Crop insurance is not mandatory. Farmers may choose whether to buy it, and for which crops. However, the RMA requires that if a farmer chooses to insure a particular field, he or she must insure *all* of his or her fields growing the same crop in the same county. This alleviates problems of adverse selection, since otherwise farmers would insure only their most loss-prone locations and the program would bear a higher loss ratio. In addition, farmers who choose to forego crop insurance are not eligible for payments for crop loss from federal disaster relief programs.

Supporters of federally backed crop insurance argue that it is necessary to bring stability to a very volatile but important sector of the American economy. Private crop insurance would definitely be more expensive (if the subsidy were removed), and might be substantially more expensive or even unavailable due to the risk of catastrophic losses over a large geographic region. Opponents have charged that crop insurance subsidies encourage agricultural over-production and encourage farming in marginal and disaster-prone areas, which harms the environment and increases general disaster relief costs.

WORKERS COMPENSATION INSURANCE

With the advent of the industrial revolution, new technology and machinery resulted in more industrial accidents. The only recourse an injured worker had was to sue their employer - a long, expensive process with an uncertain outcome. Workers compensation benefits evolved as a means by which employees injured on the job would be certain to have their injuries adequately taken care of by their employer without having to sue. Employers, as well as employees, benefited from the new system as the employer also exchanged an uncertain, potentially large payment, for a certain guaranteed benefit system.

Governments, both state and federal, participate in workers compensation insurance programs in a variety of ways. In some states, workers compensation insurance is only available through private insurance companies, while in other states it is only available from a state fund (an entity established by law to provide workers compensation insurance.) In some states, a state fund may compete with private insurers. In all states, government and private insurers cooperate in providing workers compensation insurance as the benefits are defined by law, either state or federal, and unless there is an exclusive state fund, private insurers provide the insurance coverage.

Workers compensation programs covering most employees are enacted and administered at the state level in all fifty states, the District of Columbia and the five U.S. territories. Federal government employees and certain categories of workers, such as longshoremen or railroad workers, are covered by federal workers compensation programs.

A) Federal Workers Compensation Programs

Various federal programs compensate certain categories of workers for disabilities caused on the job and provide benefits to dependents of workers who die of work-related causes. The federal government works to ensure these programs perform well under the U.S. Office of Management and Budget and Federal Agencies. The following are some major federal programs:

1) The **Federal Employee Compensation Act (FECA)** provides compensation benefits to non-military, federal employees for disability due to personal injury sustained while in the performance of duty and for employment-related disease. It is administered by the Office of Workers' Compensation Programs (OWCP) in the U.S. Department of Labor.

The Act is the exclusive remedy for federal civilian employees who suffer occupational injury or illness. There is some claimant overlap with other federal programs; however, regulations generally bar the receipt of dual benefits for the same injury/illness and mandate the reduction in benefits to offset other sources of compensation.

The program's purpose is to return individuals to work while containing the costs of the system. Designed as a non-adversarial system (i.e., no judicial review and limited

employer ability to contest claims) the program limits administrative and litigation costs, which may account for a substantial share of payout in some systems.

2) The **Longshore and Harbor Workers' Compensation Act of 1927** requires employers to provide workers compensation protection for longshore, harbor, and other maritime workers who are injured or suffer occupational diseases while working on or near navigable water in the United States. These benefits are provided by employers by either procuring insurance coverage from private insurers or by qualifying to self-insure. In some special circumstances, such as second injuries or default in payment of claims by insurers or employers, benefits are paid by a special fund administered by the Department of Labor Employment Standards Administration, Division of Longshore and Harbor Workers' Compensation (DLHWC). The DLHWC is responsible for adjudicating disputed claims and ensuring that employers and carriers pay benefits.

The Act was created to provide workers' compensation coverage for categories of workers who were not seamen and were injured while working on or near navigable water in the United States and for which no state act coverage applied. Since the enactment of the Act, there have been questions regarding when coverage under the Act ends and state act coverage begins, particularly when the injury occurs "near" navigable water. In 1984 the scope of the program was amended in an attempt to clarify the extent to which shoreside coverage applied. However, about 40 states allow concurrent receipt of state and longshore benefits. The Act provides for the offset of compensation paid to individuals under any other workers compensation law for the same disability or death. The possibility of an injured worker pursuing either longshore benefits or state act benefits is an issue that employers need to be aware of so that they have adequate insurance protection for their exposure.

3) The **Black Lung Benefits Act** (BLBA) provides wage-replacement and medical benefits to coal miners who are totally disabled due to pneumoconiosis (black lung disease) and to eligible survivors.

The program was established in 1969 out of concern that black lung victims were not receiving adequate recompense from state workers compensation systems. States have sometimes been slow to recognize chronic occupational diseases such as black lung as compensable injuries. Coal miners frequently change employment, which made it difficult to assign responsibility for a chronic disease to a particular employer. In addition, the BLBA acts as a form of disability insurance, providing compensation to survivors and dependents over and above medical care and loss of earnings. Black lung victims do remain eligible for ordinary workers compensation benefits, but if an individual receives both state and federal benefits, the federal benefit is reduced by the full amount of the state benefit.

Federal benefits are paid by the Black Lung Trust Fund which is financed by coal mine operators through a federal excise tax. In years when payouts exceed revenues, the fund borrows from general government revenue. These deficits are intended to eventually be

paid back with interest. In 2008, however, the Trust Fund deficit had grown so large that Congress made a one-time appropriation to reduce the deficit out of general funds. The hope as of 2016 is that the deficit will eventually be paid down without further excise tax increases or appropriations from general revenue.

B) State Workers Compensation Programs

The state government can act as a partner with private insurers, a competitor of private insurers, or an exclusive insurer.

Partnership with Private Insurers

State programs vary concerning who is allowed to provide insurance, which injuries or illnesses are compensable, and the level of benefits. State laws prescribe workers compensation benefits, but these laws assign to employers the responsibility for providing benefits. Employers can obtain workers compensation coverage to provide benefits to their employees by purchasing insurance from a private carrier or a state workers compensation fund, depending upon the options available in their state. They can also use self-insurance in almost every state if they demonstrate the financial capacity to do so by meeting certain requirements.

Private insurers are allowed to sell workers compensation insurance in all but a few states and territories that have exclusive state funds. Where private insurers may sell workers compensation, a public-private partnership exists since the benefits are established by state law, but insuring those benefits is the role of private insurers.

State Funds

With enactment of state workers compensation laws, the need for workers compensation insurance created its own set of problems, while solving others. Employers feared they would be forced out of business if refused coverage by insurance companies. They were also fearful that insurance carriers might impose excessive premium rates that would be a financial burden. High premium rates could negatively affect a state's economy and ultimately limit opportunities for employment. Another fear was that because the mandatory nature of the coverage reduces elasticity of demand, insurance rates might soar, enabling insurers to reap unfair profits. Some state legislators addressed these concerns by establishing state workers compensation insurance funds to provide a stable source of affordable insurance coverage.

Washington was the first state to adopt the state fund approach in 1911 and by the end of 1916, thirteen states had established state funds. As of 2016, a total of twenty- three states have state funds that provide workers compensation insurance [7].

In general, state funds are established by an act of the state legislature, have at least part of their board appointed by the governor, are usually exempt from federal taxes, and typically serve as the insurer of last resort – that is, they do not deny insurance coverage to employers who have difficulty purchasing it privately.

Among the twenty-three states that have state workers compensation funds, four have exclusive state funds and nineteen have competitive state funds. The four states with exclusive funds are North Dakota, Ohio, Washington and Wyoming. The South Carolina state fund is a hybrid; it is an exclusive insurer for state employees and is available to cities and counties to insure their employees, but it does not insure private employers.

Competitive State Funds

In states with competitive state funds [8], state funds sell workers compensation insurance, at least theoretically, in competition with private insurers in insuring and administrating the workers compensation laws. In some states, Oklahoma is one example, the state fund is not permitted to refuse coverage to an employer, no matter how undesirable the risk, so long as past and current premiums are paid. In this regard they are referred to as "insurers of last resort". In other states such as Oregon, the state fund does not operate as the insurer of last resort. The mission of the state fund is set out in the Oregon statute that authorizes the existence of the state fund. This mission is to "make insurance available to as many Oregon employers as inexpensively as may be consistent" with protecting the integrity of the Industrial Accident Fund and sound principle of insurance [9].

Exclusive State Funds

In states with exclusive state funds, private insurers are not permitted to provide workers compensation insurance and state funds enjoy the exclusive right to sell workers compensation insurance. All employers are required to procure their workers compensation insurance from the state fund, or, in some jurisdictions, an employer may also self-insure.

Residual Markets

In states without a state fund, or with a state fund that does not serve as an "insurer of last resort", it will sometimes happen that an applicant for workers compensation insurance is unable to obtain coverage. Private carriers are limited by regulation in the rates that they can charge. If they believe that the maximum rate will be inadequate for a particular insured, they simply decline to write the policy. This may be because the prospective insured has an inherently hazardous business model, or poor safety practices, or a poor or inadequate loss record.

If states took no action on behalf of such applicants, the applicants would have little choice but to go out of business. This would increase unemployment and impair tax revenues. As a result states without state funds have set up residual market mechanisms to act as insurers of last resort.

The details of this mechanism vary from state to state. Applicants generally enter the residual market after being declined by at least two private carriers. In some states such applicants are assigned to carriers based on their workers compensation market share, with the carriers writing policies and collecting premium and paying claims just as if they were serving the applicants voluntarily.

In other states, carriers reinsure undesirable applicants via a reinsurance pool, and profits or losses from the pool are shared among carriers in proportion to market share. In still other states, the state authorizes a Joint Underwriting Association to serve the residual market, and with carriers sharing on a pro-rata basis profit or loss. Note that these residual market mechanisms closely parallel the automobile liability residual market mechanisms described by Cook [10].

The market share within the residual market varies from state to state and year to year, depending on filed rate adequacy and the risk appetites of insurers. In 2014 the aggregate residual market share was about 8% within the states for which the National Council on Compensation Insurance (NCCI) collects data. The combined ratio for residual market business, over the last several years, has been running between 105% and 115% [11]. As one would expect, residual market business is generally written at a loss despite generally higher rate levels for residual market risks. This results in a higher combined ratio for workers compensation insurers, either directly as residual risks are assigned to carriers, or indirectly as reinsurance or JUA losses are pro-rated. The voluntary market effectively subsidizes the higher-risk residual market, despite higher rate levels for residual market risks.

C) Evaluation of Workers Compensation Insurance

Private carriers remain the largest source of workers compensation benefits. In 2013, they accounted for 56% of benefits paid in the nation, with state funds at 15%, self-insurers at 23%, and the federal government at 6% [12]. The trend in the share of benefits paid by state funds has decreased in recent years, down from 20% in 2004.

Nevertheless, the state funds have created significant competition in the workers compensation insurance business in the states where they operate. State funds have a significant market share in virtually every state where they are located. In 2013, state fund market share (as measured by benefits paid) in competitive state ranged from 7% in Pennsylvania to 59% in Idaho [12].
Proponents of state funds argue that because the state funds are specialists in workers compensation they can be expected to offer more intensive levels of rehabilitation and

other services than some private insurers whose workers compensation plan is only one of several types of coverage offered. However, there are private insurers who also specialize in providing only workers compensation coverage and may offer the same level of service and expertise as the state funds.

State funds are, by law, designed to be self-supporting from their premium and investment revenue. Overhead expense ratios of both exclusive and competitive funds may be lower than expense factors for private carriers in part because of absence of some administrative costs such as agency commissions and other marketing costs. As nonprofit departments of the state, or as independent nonprofit companies, they are able to return dividends or safety refunds to their policyholders, just as some private insurers do. This further reduces the overall cost of workers compensation insurance both for the state fund as well as the private insurer that offers these types of programs [2] [3]. While lower administrative costs for state funds may reduce the cost of providing workers compensation coverage, the fact that more states have not created state funds, and some state funds have been privatized recently, suggests that private insurers are also able to provide this coverage in an efficient manner.

The evidence suggests that both state funds and private insurers are able to provide workers compensation coverage in an efficient manner.

D) Interaction of Workers Compensation Insurance with Medicare

Background

In 1965, Congress created the Medicare program to provide health insurance for elderly Americans. The authors of the law creating Medicare recognized that it might overlap with other private or government insurance programs—especially workers compensation insurance.

For example, a 67-year-old worker might be injured in a job accident. That worker would be entitled to have his or her medical costs reimbursed by his or her employer's workers compensation insurer. However, that worker, being more than 65 years of age, might also be eligible for Medicare. To save Medicare costs, Congress therefore stipulated that workers compensation insurance would be primary in such a case. Medicare would be secondary and would begin to pay only if and when workers compensation benefits were exhausted.

In 1980, Congress passed the Medicare Secondary Payer Act, which stipulated that Medicare was also secondary to liability insurance. For example, if an elderly American were injured by another driver in an auto accident, the responsible driver's insurance would be primary and Medicare secondary.

The 1980 act also introduced the notion of a "conditional payment". In many cases persons begin incurring medical costs before eligibility to collect insurance has been

determined. In such cases Medicare will make "conditional payments" to medical providers, subject to later reimbursement by an insurer subsequently determined to be primary.

In some cases workers compensation claims are closed via a settlement which provides compensation to the injured worker for anticipated *future* medical payments. These payments can also overlap with Medicare. For example, a 63-year-old worker may be injured on the job. That worker is not eligible for Medicare. However, the worker's claim may be closed with a settlement that allows for medical treatment anticipated to last five years. By the end of that time the worker will be Medicare-eligible.

Federal regulators therefore introduced (1989) the Medicare Set-Aside Allocation (MSA), in which all parties to a settlement would agree to "set aside" a portion of the workers' compensation or liability settlement to be used to pay for future medical costs related to the workers' compensation or liability injury. The MSA funds are primary over Medicare and are limited to services that are related to the injury that would be covered by Medicare after the injured party becomes Medicare eligible.

Despite these laws and regulations, the status of Medicare as secondary insurer remained mostly notional through the Twentieth Century. Medicare administrators simply did not know when Medicare eligible (or soon to be eligible) parties were collecting workers compensation or liability payments. In the absence of aggressive collection, parties had little incentive to agree to MSA's.

Medicare Set-Aside Allocations since 2001

This became increasingly untenable as Medicare costs rose due to medical cost inflation and longer life expectancy. In 2001 the Center for Medicare and Medicaid Services (CMS), which administers Medicare, established its first guidelines for the review and approval of MSA's. The implied threat was that, where MSA's were not submitted, or not approved, Medicare would refuse payment for future care, and be more aggressive in seeking reimbursement for past conditional payments.

Since 2001, the submission and approval process for MSAs has changed several times. The changes have generally been in the direction of making MSA approval more difficult. A new sub-industry of MSA consultants has emerged to assist Third Party Administrators and insurers to evaluate settlements for MSA requirements and gain the approval of CMS.

As of 2012, CMS will review all workers compensation MSA's where:

- The claimant is either a Medicare beneficiary and the settlement is greater than $25,000 or
- The claimant is expected to be Medicare eligible within 30 months of the settlement and the settlement or expected future medical costs and lost wages of the injury exceeds $250,000.

The CMS thresholds do not create a safe-harbor, so even smaller medical settlements should consider Medicare's interests.

In 2016, the CMS announced that it will also begin reviewing liability and no-fault insurance MSA's.

After an MSA is approved, the injured worker must comply with reporting requirements and use the MSA appropriately. Claimants must agree to pay their workers compensation-related medical bills, using an interest-bearing account, and to complete reporting of their payments before Medicare will make <u>any</u> payments for claim-related conditions.

CMS can reject or revise MSA proposals, increasing the estimated lifetime medical need, to assure that Medicare rarely becomes liable for claim-related expenses throughout the claimant's life. Two specific issues – pharmacy costs and life expectancy – are often cited as areas of concern. With Medicare Part D, pharmacy costs were added to Medicare. In 2009, CMS issued pharmacy guidelines for MSAs, which essentially priced drugs at the retail cost level without regard to negotiated price arrangements that the insurer may have. However, many drugs commonly used for pain management are not included in Medicare Part D.

Due to industry concerns [13], in May 2010 Medicare issued clarifying language that drugs which were not included in Medicare Part D did not need to be considered in a MSA. This reduced the prescription costs in MSAs and was hailed as a significant victory in the insurance industry.

Another issue which can raise the costs of a MSA is use of a "rated age" or impaired life expectancy versus the claimant's actual age. If a rated age is used, that means the injured person's life expectancy is less than normal which allows the settlement amount to be less than would be needed for an individual with a normal life expectancy. If CMS protocols for rated ages are not followed, CMS will recalculate the MSA using the claimant's actual age rather than the impaired life expectancy. Due to the nuances of CMS approval, many insurers use specialists to review their MSA proposals prior to submission to CMS and to shepherd the claim through the process. Use of specialists increases the administrative costs of settling such claims.

<u>New Reporting Requirements since 2007</u>

On December 29, 2007, President George W. Bush signed the "Medicare, Medicaid and SCHIP Extension Act of 2007" (MMSEA). This law sought to address the problem of CMS being unaware of primary payer responsibilities, whether or not a claim involved an MSA. The law requires claim payers, known as Responsible Reporting Entities (RREs), to report claim data to the CMS. Specifically, Section 111 of the act requires the providers of liability insurance (including self-insurers), no fault insurance and workers' compensation insurance (hereinafter "insurers") to determine the Medicare-enrollment

status of all claimants and report certain information about those claims to the Secretary of Health and Human Services, through the CMS.

The implementation of the reporting requirement was delayed, as regulations and technology issues were ironed out, but reporting became mandatory on January 1, 2011 for insurers with workers' compensation claims. Reporting of liability claims was phased in (with the largest claims first) beginning on January 1, 2012.

CMS uses the Section 111 data to assist Medicare in coordinating benefits and in uncovering potentially reimbursable claims. There are substantial penalties for non-compliance with the required reporting of claims - $1,000 per day per beneficiary for each day the insurer is out of compliance. This penalty is in addition to a "Double Damages Plus Interest" penalty that defendants (as primary payers) can be fined if Medicare's right to reimbursement is ignored in any settlement. This rule applies to settlements on or after October 1, 2010.

Property/Casualty Actuarial Implications of the Recent Changes

From 2008 through 2010 there may have been an increase in claim closings, lump-sum payments or settlement in advance of the Section 111 reporting deadline. Some RREs may have taken the opportunity to decrease the volume of relatively minor claims that would otherwise need to have the Medicare eligibility status of the claimant determined and reports made to CMS. For actuaries reviewing both insurers' and self-insurers' loss data, such claim activity can distort both paid and reported losses.

Slowdowns in claim settlement rates are sometimes attributed by Workers Compensation claims professionals to the CMS changes in procedures and increased emphasis on MSAs. CMS approval of MSAs generally takes 60 to 90 days, which can contribute to a slowdown in settlements. It is possible that some portion of increasing WC medical trends is due to MSAs. In the past, claim settlements may not have specifically identified medical vs. indemnity components and the settlement costs may have been entirely attributed to indemnity. With MSAs, a clear portion of the settlement is identified as medical cost, and the CMS procedures may also have increased the average size of the settlements due to future medical considerations. However, to date there are no publicly available studies to quantify the impact on overall costs or severity trends.

In addition, for some entities, a significant risk factor could be that some injured workers currently receiving Medicare payments should be classified as workers compensation claims. The Section 111 reporting could uncover Medicare payments that should shift to workers compensation claims, causing actuarial estimates to increase as CMS files liens to recover payments. Over the last three years *before* claim reporting was required, the number of recovery demands from CMS increased significantly to 74,000 in 2010 from 43,000 in 2007 [14]. The number may continue increasing after 2011, or it may spike and then settle down as CMS catches up. Note that recovery can affect claims that were open in prior years, even if they are closed now.

Successful recoveries naturally increase claim severity to an insurer. The General Accounting Office (GAO) estimates total saving due to Medicare claim denials and recovery of payments of $737 million in 2008, rising to $861 million in 2011. These are costs that are borne by insurers instead of Medicare. Furthermore the GAO notes that "(A)n accurate estimate of savings could take years to determine because of the time lag between initial notification of Medicare Secondary Payer situations and recovery, the fact that not all situations result in recoveries, and the fact that mandatory reporting is still being phased in." [15]

In 2012, new legislation affecting the interaction of Medicare and private property-casualty insurance was passed. A key provision of the Strengthening Medicare and Repaying Taxpayers Act, or SMART Act, was the implementation of a 3-year statute of limitations on Medicare conditional payment recovery. This provision became effective on July 10, 2013 and provides that an action by the federal government for recovery must be filed no later than 3 years after the date of the receipt of notice of a settlement, judgment, award, or other payment.

While the statute does not define how notice of the settlement, judgment, award or other payment is to be made to Medicare, the provision was put in place with the understanding that notice would be through Section 111 Mandatory Insurer Reporting. It is unclear then whether other types of "non-Section 111 Mandatory insurer Reporting" to Medicare will trigger the limitations period, or whether the statute of limitations will be effective in curtailing increased workers compensation claims should Medicare not cover certain claims.

Changes in the Future?

Section 111 reporting is in its infancy. It is uncertain how CMS will use the huge volume of data that it is collecting, whether this will lead to a significant further increase in set-asides or recovery demands, and whether the statute of limitations will temper claim volume. It may take years for changes to be fully apparent, especially for liability lines for which mandatory reporting didn't begin until 2012 and will be phased in.

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Tort Reform Tension

Some countries, such as the U.S. and Australia, have made headway on reforming tort systems that many perceive to be unfair, costly and inefficient. Joint and several liability, compensatory damages, collateral sources and vicarious liability have specifically been targeted for change. Has the time come for amendments to Canada's legal rules?

August 1, 2005 **by Craig Harris**

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The wave of tort reform experiments that have washed over the legal systems of other

countries has barely caused a ripple in Canada. Despite the 2002 Attorney General Geoffrey Plant's civil liability review project in British Columbia, few provinces have gone fishing for serious changes to the way courts assess and rule damages. But insurers say the recent hard market revealed that reforms to key legal principles are necessary to reach the goals of stability and predictability.

"The primary reason behind the increase in claims (in the commercial liability market) is the cost of settling court cases and potential court cases, which has increased significantly over the past few years," according to the Insurance Bureau of Canada (IBC).

Australia enacted a sweeping series of changes to damage awards in 2003 and have addressed limits to liability but, currently no province is actively looking into tort reforms. Several groups, ranging from the IBC to the Risk and Insurance Management Society's Canada Council to the Voluntary Sector Forum to the Ontario Federation of Snowmobile Clubs, have targeted unreasonable liability lawsuits as a primary source of increasing claims costs and exposures.

"RIMS and Canadian risk managers have long supported meaningful tort reform to eliminate economic unpredictability and inefficiency," Lance Kayfish, chair of the RIMS Canada Council Sub-Committee on Communications and External Affairs and a risk manager for the City of Kelowna, B.C., says. "It has been on our radar screen for some time."

According to the IBC, court awards and legal expenses cost approximately $7.3 billion in 1998. By 2003, tort costs rose to an estimated $10 billion. These numbers pale in comparison to the sharp increase in tort costs experienced in the U.S. A Tillinghast study released in January shows that tort costs reached a record $246 billion in 2003. In Australia, court awards increased at a rate of 10% per year from 1992 to 2002, which contributed to an "insurance liability crisis in 2002," according to the Australian government treasury.

ATTENTION TO THE AUSSIE WAY

In 2003, the Australian government undertook a "program of unprecedented law reform and achieved a raft of changes unmatched in the common law world for their breadth and scope," the treasury department noted in a report. Specifically, the changes involved three main areas – establishing liability, clarifying damages and undertaking procedural reforms. In particular, the amendments changed the way courts decide issues such as duty of care, foreseeability, causation and remoteness of damage and the standards to which professionals should be held.

The U.S. has been equally aggressive in its push for tort reform, spearheaded in many cases by the insurance industry. The Insurance Information Institute, AIG and the U.S. Chamber of Commerce released a paper early in 2005 entitled "Tort Excess: The Necessity for Reform from a Policy, Legal and Risk Management Perspective."

"The American legal system remains the most expensive civil justice system in the world, costing more than double that of other industrialized nations," the study argues. "Civil justice reform legislation aims to return integrity to the U.S. legal system, abolish incentives for abuse now endemic in the system and redirect the system on an efficient, timely, predictable and fair course."

Noting that the "future insurability of some types of liability risks is in doubt," the report cites several key reforms that either have taken or should be taking place across states, including capping non-economic damages, modifying the joint and several liability rule, restricting punitive damage awards and revising the collateral source rule.

REFLECTING ON REFORM

An IBC document stated that "(tort reform) is an area garnering increased attention internationally, as reflected in the tort reforms that several US states have passed and the state legislative reforms to limit the escalation of liability costs in 2003." But the big question now is – what could tort reform look like in Canada and what are the chances of any changes being

enacted here?

The IBC has put some thoughts together on what it would like to see changed in specific areas of tort and general damages. Acknowledging differences between the U.S., Australian and Canadian environments, IBC vice president and general counsel Randy Bundus says there are some clear areas ripe for reform – joint and several liability, the collateral sources rule, establishing net income as the basis for determining damages and vicarious liability. “Our goal is to strike a balance in terms of fairness between the plaintiff and the defendant,” Bundus says.

Some legal groups agree with this approach. Jamie Chipman, a partner with Stewart McKelvey Stirling Scales and president of the Canadian Defence Lawyers Association, says there is a “need for clarity. It’s necessary to finally become proactive in tort reform because I am looking at what the Supreme Court of Canada has been doing of late with respect to any cases involving insurers and statutory language. The Supreme Court is saying if you don’t do anything with this antiquated language, we are going to continue to find a way to come out with decisions that are ‘plaintiff-friendly’.”

Not surprisingly, trial lawyers in Canada tend to disagree with the thrust of any tort reform measures. “The insurance industry likes to look at numbers, but as lawyers we are in the justice business,” Russ Howe, president of the Ontario Trial Lawyers Association and a partner with Boland Howe Barristers, says. “And the number one rule of law is that the innocent party gets full compensation. And that is what rules like joint and several liability are all about.”

WHAT CURRENTLY COUNTS IN COURT

Under the current joint and several legal doctrine, courts allow the plaintiff to recover all of the damages from one of multiple wrongdoers, even if that party is only partially at-fault for the loss. It is one of the primary areas that IBC and other parties would like to see changed. “We don’t think it is fair for a defendant who is found to be only one per cent at fault to potentially have to pay 100% of the loss,” Bundus says.

“RIMS supports the elimination of joint and several liability for all non-economic damages, such as pain and suffering and punitive damages,” Kayfish says. “We believe this would discourage plaintiffs and their counsel from approaching defendants on the ‘deep pocket’ syndrome.”

Eric Gunnell, director of claims and litigation for the Ontario Municipal Insurance Exchange (OMEX), says joint and several liability is a “big issue for us. Because we represent municipalities, we are often the deep pocket they come to. And all they have to do is find that 1% (liability).”

The tendency towards “plaintiff-friendly” rulings makes some insurance groups reluctant to go to court. “We don’t like to go to trial, because there is no rhyme or reason to the settlement,” Gunnell says. “So we go to mediation and sit down and say if we don’t throw something in today, we could lose it all tomorrow.”

But Howe says trial lawyers must demonstrate that there is some liability for a party in the case of a loss. “To get them in the game, we have to prove they did something wrong,” he notes. “And realistically, lawyers don’t go to trial on cases where they think they are going to get one point on liability. That is way too risky.”

Howe also argues that joint and several liability has the salutary effect of increasing efficiency in the legal system. “It promotes settlement in many cases. If parties were only going to end up paying on some percentage basis, we would have way more trials. That would be very expensive and slow the whole system down.”

Jim Sami, general manager and attorney in fact for the Ontario School Board Insurance Exchange (OSBIE), says “trial lawyers play the (joint and several) card to the extreme, not only at the trial but also in negot
iations at mediation. They know if they have a deep pocket there they can use it to the maximum.”

Sami acknowledges that “there is a fairness issue in that maybe the guilty party does not have the ability or coverage to indemnify the injured party. Having said that, there are different ways to look at how joint and several could be changed. One way is to have a fund to pay for these kinds of lawsuits, similar to PACICC.”

Gunnell says if joint and several liability is not scrapped, it should at least be amended so that it is proportionate. “If you are going to keep it then let’s change it around, so that if you are in for 1%, just pay your 1%; not in for a penny and pay the pound,” he argues.

THE BIGGER PICTURE

There are other areas beyond joint and several liability that insurers and other groups are interested in amending. Currently, damages for loss of income are determined on the basis of gross earnings, which do not take into account taxation and other employment deductions. In other words “plaintiffs can collect more than they would have received if they were working,” Bundus says. In addition, the collateral source rule means that plaintiffs have the potential for “double recovery” – once from the wrongdoer and secondly from insurance, sick pay and disability plans carried by employers or employees.

Gunnell argues that when it comes to loss of income “it is too easy to ramp up what this person could be worth. You start getting some astronomical numbers, and that ends up scaring you off going to trial, because your policy is going to be tagged. It is amazing what people could end up making when they ramp it all up.”

Howe counters that the government has granted the victim’s right to full compensation by not taxing future income. “This is a tax break that the government has decided to give to injured people and the insurance industry wants to steal it,” he says. “The question of taxes is between the individual and the state. The insurance industry is sticking its nose where it doesn’t belong.”

VESTING VICARIOUSLY

In terms of vicarious liability, Gunnell says last years introduction of Bill C-45 into Ontario, which introduced criminal liability for employees and organizations for negligent conduct, has raised awareness of the issue. “‘We are starting to see it come out more now, ” he says. “Some of our members are saying `we have to look at our procedures, we don’t want to be held responsible for what one of our employees did,’ I think we are getting back to some of the reasons why auto went to no-fault in 1990, and that was to try to get it away from liability. Now, we seem to be falling right back into it.”

Vicarious liability is a broad, complex area of the law, Kayfish says, “but risk managers share the view that the standards and test for establishing vicarious liability are not high enough in many cases.”

The two main issues in vicarious liability today are sexual abuse claims and car leasing or renting (see Canadian Underwriter, March 2005 “The Politics of Leasing” and May 2005 “Staying on the Road.”). Howe says “vicarious liability is vital, you can’t dump it. For the leasing companies, it would be the biggest joke of all. Because it would mean the companies that are making money off this would be held to a lower standard than me if I lend my car to my brother.”

Other topics on IBC’s laundry list of legal reforms include disallowing gross-up for income tax and requiring that the courts order structured settlements in all cases where the plaintiff has future care or future income losses. Additional changes could see the elimination of prejudgment interest on general damages and the calculation of prejudgment interest on pecuniary losses from the date the claimant notifies the defendant they will be suing.

One area not mentioned in IBC documents, but still of concern to large insurance organizations is class action lawsuits, according to Sami. “These lawsuits are the one area that could create major havoc,” he says. “The cost of defence is a major concern and you can spend a lot of time and money in just fighting a certification case. I believe class action reform would be a valuable

area to consider."

Another issue that risk managers think should be reviewed is severe sanctions on frivolous lawsuits, according to Kayfish. "We think this will go a long way toward improving efficiency in the tort system." He notes that in provinces like Alberta, there are available remedies, such as the awarding of "double costs' against plaintiffs for frivolous lawsuits.

For Gunnell, the entire process of tort reform is long overdue here. " I think there is an appetite for tort reform in Canada," he says. "I used to think we were years behind the U.S. in terms of settlements. Now, I think we are right up there. We have to start moving from talking about it to doing something about it."

Howe argues that litigation in the U.S. is a "whole different world." The so-called reforms, like caps on non-economic damages, already exist in Canada. The same goes for punitive damages, which are minimal here compared to the U.S. The bottom line is that if the innocent victim doesn't get full compensation, we have just abandoned Magna Carta and hundreds of years of jurisprudence," he explains.

Bundus says the current tort reform proposals are just that – proposals – which could form part of an organized lobby to legislators. At this stage, however, it is not clear which group, or whether a coalition of groups, will lead the charge on tort reform. In Canada, the common law, including the law of negligence, falls within the jurisdiction of the provinces (Quebec operates on the civil code). That means lobbying for tort reform, if and when it comes, will need to be coordinated with various attorney generals.

"Tort reform will have to be done on a province by province basis," Bundus says. "Hopefully, there will be some receptive provinces and this will allow the industry to show that the experiment can work. This is an issue that affects all of society and requires some necessary changes."

Institute and Faculty of Actuaries

"Solvency II Technical Provisions for General Insurers"
August 2013
Sections 6.4 and 6.5

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CODE OF CONDUCT FOR INSURERS' USE OF CREDIT INFORMATION (CODE)

PURPOSE

The purpose of this Code of Conduct is to provide insurers who use credit information in their underwriting and rating activities for personal insurance with guidelines on the use of credit information in accordance with principles of consumer protection and applicable federal and provincial laws.

SCOPE

This Code applies to personal insurance only and does not apply to commercial insurance. In this context, "personal insurance" means private passenger automobile, homeowners, motorcycle, mobile-homeowners and non-commercial dwelling fire insurance policies [including boat, personal watercraft, snowmobile and recreational vehicle polices]. Such policies are individually underwritten for personal, family or household use. "Credit information", is defined in this Code to include credit scores, credit history, credit reports and other credit related information as defined under the provincial Consumer Reporting Acts.

These guidelines are for the use of credit information obtained from a consumer reporting agency in the context of quoting, underwriting and rating.

1. Comply with provincial laws

The insurer must be aware of and fully comply with any federal and provincial laws and regulations (including but not limited to Privacy Legislation and Consumer Reporting Acts) affecting their use and/or management of credit information.

2. Ensure credit information used is current and accurate

a) The insurer must use up to date credit information:

- The insurer shall not use credit information that is not current;
- The insurer shall update any customer credit information used, at the customer's request.

b) Ensure accurate credit information is used:

- When informed by a consumer reporting agency of a correction, supplement or deletion to an individual's credit file, the insurer must immediately make the necessary adjustments to the file and shall re-underwrite and re-rate the consumer as soon as practical;
- After re-underwriting or re-rating the insured, the insurer shall make any further adjustments that are consistent with its underwriting and rating practices;
- If an insurer determines that the insured has overpaid premium it shall comply with pertinent regulations relating to refunding of overpayments;
- At the request of the consumer, the insurer shall inform the consumer of the source/supplier of the credit information used (i.e. identifying the specific consumer reporting agency that supplied the credit information);
- The customer/applicant for insurance is responsible for contacting the consumer reporting agency to verify his/her file and, if applicable, request that it be corrected.

3. Gathering prior consent to collect and use credit information (written or verbal)

The insurer must secure prior consent to collect and use credit information from the consumer in accordance with the following principles and procedures:

a) Consent must be informed.

The following are characteristics of informed consent:

- Customers must not feel obliged to give consent;
- Customers must understand the nature and scope of the request. The request for consent must be clear and understandable to ensure that customers know specifically what they are consenting to and how that consent will be used;
- Consent must be specific and the insurer must not presume consent will be given. Consent may be given verbally, in writing or via an e-medium. E-medium consent should be a field that the policyholder can click on directly in order to give consent.

Prior to an agent or broker collecting credit information, the customer consent field (agent's or broker's screen) must be clear and explicit for the user. The field must not default to yes.

b) No one can give consent for another person. Consent must be obtained directly from each individual in the household if their credit information is to be used. Any applicant or co-applicant about whom credit information will be collected and used must either provide a signed consent form or provide verbal consent directly to the agent or broker.

c) **Consent retention:** The insurer must maintain the trail or proof of consent in the customer file (paper, e-medium or other). The retention period for the customer file is the minimum period required by law.

d) **Duration of consent:** The consent is valid for the duration that the policy is in effect. Unless withdrawn by the policyholder, consent is valid for as long as the policyholder has a continuous business relationship with the insurer, i.e., the policy is in force until cancelled. Under these circumstances, the insurer can request the insured's credit record or credit information from the consumer reporting agency, by relying on the initial consent.

Wording of consent question (Verbal or written)	
Key elements to be included in the consent request:	
i.	Authorization to collect information from consumer reporting agencies;
ii.	Nature of the information sought (e.g. credit information);
iii.	Use made by the insurer of the credit information (what will it be used for);
iv.	Consent use period (validity);
v.	Right to withdraw and consequences (an insured may withdraw consent at any time in writing; however, he or she might not benefit from the insurer's best quote).

4. Keeping customers' credit information confidential and private

The insurer must respect the confidential nature of personal credit information. The only persons who should have access to the information are those who require it to do their job.

Relevant Canadian consumer and privacy protection laws are to be fully complied with. Among these is PIPEDA (Personal Information Protection and Electronic Documents Act), the federal privacy law that sets out rules around how private sector organizations may collect, use or disclose personal information. For example:

> Consent is required for the collection of personal information and the subsequent use or disclosure of this information. Privacy legislation applies at the time that personal information is collected or in cases where the information has already been collected, prior to it being used for a purpose not previously identified. (PIPEDA, Principle 4.3.1)

> Personal information is not to be used or disclosed for purposes other than those for which it was collected, except with the consent of the individual or as required by law. Personal information is to be retained only as long as necessary for the fulfillment of those purposes. (PIPEDA, Principle 4.5)

5. Use of credit as a sole variable

The insurer must not refuse to quote or base an insured's renewal rates, or deny, cancel or non-renew a policy of personal insurance solely on the basis of credit information without consideration of other non-credit underwriting or rating variables.

6. Legitimate uses of credit information – pricing, underwriting or financing of premiums - modeling

An individual's credit information must not be double counted in rating an individual's premium, consistent with established actuarial practice.

The insurer must seek assurance from suppliers of credit information that the following are not used as a negative factor in any credit scoring models:

i. Inquiries by the consumer for his or her own credit information;

ii. Inquiries relating to insurance;

iii. Income, gender, address, ethnic group, religion, marital status, or nationality of the consumer;

iv. Multiple lender inquiries, if coded by the consumer reporting agency on the consumer's credit information as being from the home mortgage industry and made within 30 days of one another, unless only one inquiry is considered;

v. Multiple lender inquiries, if coded by the consumer reporting agency on the consumer's credit information as being from the automobile lending industry and made within 30 days of one another, unless only one inquiry is considered.

vi. Factors used in establishing an individual's credit information must not include factors expressly prohibited in provincial insurance regulations or bulletins, which may vary by province.

7. Handling of Consumer Disputes

Consumer complaints about the insurer's use of a customer's credit information are to be addressed by the insurer in accordance with the complaint procedure provisions as required under federal (i.e. Financial Consumer Agency of Canada) and provincial law.

8. Taking adverse action as a result of credit information

a) The Insurer must treat consumers fairly when they have no record of credit information or they are unable to create a credit score. In particular, this means:

- Customers with an absence of credit information shall not be denied coverage, cancelled or non-renewed a policy of personal insurance without consideration of any other applicable underwriting factors;
- In the absence of credit information, underwriting and rating decisions will be based upon the relevant information which is available to the insurer.

b) The insurer must disclose to the consumer adverse action taken only as a result of credit information.

- Notification should be provided to the consumer explaining the reason for the adverse action and in accordance with applicable Consumer Reporting Legislation laws.

9. Refusal of consent

The insurer shall not refuse to provide an insurance quote to the customer, nor refuse to insure a customer, nor terminate or refuse to renew a policy because the customer refuses to give consent to use their credit information. In this situation the customer will be offered a competitive rate but may not qualify for related discounts or the insurers' best quote.

An insurer shall not refuse to provide an insurance quote to a customer, nor terminate or refuse to renew a policy solely because of unfavourable credit information.

10. Extraordinary life circumstances

If a customer believes that his or her credit information resulted in an adverse action by their insurer and that their credit has been adversely impacted by an extraordinary life event, the customer could elect to provide a written request detailing the extraordinary event to their insurer. The insurer would then review the decision to use credit information as a rating and underwriting tool for this customer. The request must provide appropriate supporting documentation verifying how and why their credit history was adversely influenced and why it should be reconsidered. If an exception is approved by the insurer, the customer would be re-rated accordingly

Provided that there is sufficient evidence, extraordinary events may be considered by the insurer for the granting of reasonable exemptions. *An "extraordinary life event" could be, for example, an identity theft or a catastrophic event as declared by provincial authorities.*

If deemed necessary at the discretion of the insurer, consumers shall be provided a notice that reasonable exceptions are available and information about how the consumer may inquire further.

2015

IBC BAC

The financial management of flood risk

An international review: Lessons learned from flood management programs in G8 countries

About Insurance Bureau of Canada

Established in 1964, Insurance Bureau of Canada (IBC) is the national industry association representing the Canadian private property and casualty (P&C) insurance industry. Our members account for more than 90% by premium volume of private auto, home and commercial insurance sold in Canada.

The P&C insurance industry employs more than 118, 000 Canadians, pays $6.7 billion in taxes and levies to the federal, provincial and municipal governments, and has a total premium base of $48 billion, approximately half of which is derived from automobile insurance.

IBC's role is to be active on behalf of its members. IBC does this by:

- Leading on issues of national importance to its members and all Canadians;
- Forecasting and responding to issues that arise in the industry;
- Anticipating opportunities to identify, shape and influence change in support of members' business needs; and
- Lobbying the federal and provincial governments to secure changes in public policy and in the business-operating environment that will benefit insurance companies and their customers.

IBC works on a number of fronts to increase public understanding of home, auto and business insurance. It also fosters public understanding through its five regional consumer centres, where trained personnel with many years of industry and government relations experience answer tens of thousands of consumer inquiries each year.

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Executive Summary

The purpose of this paper is to examine best practices and available models for managing the financial impact of floods. The paper (i) identifies key issues specific to flood risk management, (ii) evaluates international experience with public and private flood insurance programs, and (iii) draws out lessons for Canada's approach to the financial management of flood risk and the role of insurance.

Although the market is now starting to change, residential coverage for overland flooding has historically not been available in Canada. There are three key reasons explaining this fact.

First, flood risk does not lend itself to the economics of insurance. It inherently leads to adverse selection, which, in turn, hinders the basic insurance principle of diversification through risk pooling. As a result, flood insurance is hard to offer and, when available, it is naturally expensive.

Second, flood-related losses are often directly attributable to under-investment in public infrastructure, poor asset management, obsolete building codes and ineffective land-use planning. Unless governments fulfil their obligations to improve risk planning and mitigation, the widespread availability of residential flood insurance may remain commercially unviable.

Third, Canada lacks effective flood hazard maps, which are an essential risk-assessment tool. Insofar as the risk of flood cannot be adequately assessed, the financial management of this risk remains a challenge. Recent large-scale flooding has provided insurers with helpful flood risk information, but mapping allows for the assessment of risk prior to flooding occurring.

The limited insurability of flood risk, in turn, means that taxpayers are bearing a significant burden for flood damage across the country, as is evident by examining spending on the Disaster Financial Assistance Arrangements (DFAA) program. Since the 1970s, federal payments for flood assistance have totalled $6.2 billion – or 70% to 80% of total DFAA spending. These costs have more than quadrupled in 40 years, swelling from a cumulative $300 million in the 1970s, to $1.2 billion in the 2000s, to a staggering $3.7 billion in the first four years of this decade. While the recent restructuring of the DFAA has devolved more of these costs to provincial tiers of government, taxpayers still remain the ultimate funding source for flood loss compensation.

Despite the long-standing exclusion of overland flooding, insurers have often ended up paying for flood-related damage in the event of a major flood.

Payouts from extreme weather have more than doubled every five to 10 years since the 1980s. For each of the past six years, these payouts have been close to or above $1 billion in Canada. In 2012, losses hit $1.2 billion. In 2013, losses were a historic $3.4 billion, due to floods in Alberta and Toronto. In 2014, losses again approached $1 billion. By comparison, insured losses averaged $400 million a year over the 25-year period from 1983 to 2008. Water claims have become the number 1 cause of home insurance losses across the country.

IBC's examination of the flood management programs in G8 countries offers insights into solutions that may be applicable in Canada.

Every country has had to wrestle with the same issues. The approaches that have been developed span along a continuum that ranges from insurance-based to government relief solutions, including approaches that are fully private, fully public or in between.

Although none of these countries offer a template readily transferable to Canada, IBC has identified several best practices and lessons learned that can guide the financial management of flood risk here at home.

Whether residential flood insurance will ever become commercially viable in Canada, the international experience clearly points to four preconditions that are essential to establishing a strong flood risk management culture.

1. There must be accurate and up-to-date flood hazard mapping to allow all tiers of government – as well as insurers, developers and other key private-sector stakeholders – to make smart decisions about asset management, urban planning and flood risk management;
2. There must be ongoing and adequate investment in flood defences, and sewer and stormwater infrastructure;
3. There must be widespread awareness of flood risk and a sound understanding by all stakeholders – including governments, communities and individuals – of the physical and financial consequences of flood risk and the tools available to ensure Canadians are prepared; and
4. There must be limited recourse to government revenue to finance post-disaster compensation so that individuals face effective risk-mitigation incentives, and the financial burden on taxpayers is minimized.

In the recent past, individual insurers have started taking steps to address this coverage gap, but it remains clear that, as an industry and as a country, a more comprehensive and institutionalized solution is needed to tackle the pressing challenges faced by high-risk properties.

Consequently, IBC welcomes the federal government's commitment to work with the industry to develop a national approach to flood insurance. The approach, from the industry's perspective, will need to address the preconditions listed above, and identify clear roles and responsibilities for all of the stakeholders.

Introduction

It is now widely established that the weather around the globe is changing, and Canada is feeling the effects of this trend first-hand.

Over the past 60 years, average temperatures in Canada have increased by more than 1.3°C – about twice the global average. During the same time period, the weather has also become wetter, with an average 12% increase in rainfall across the country. As a result, Canadians now cope with an additional 20 days of rain per year, compared to the 1950s. It is projected that for some regions in Canada, storms that used to strike every 40 years will occur every six years by 2050.[1]

The wetter, warmer environment has led to more violent, extreme weather patterns, including storms and floods. Over the past two decades, storms and floods have increased in frequency by a factor of 20, making overland flooding the most frequently occurring natural disaster that affects the most people worldwide. Between 1900 and 2012, there were 289 significant floods in Canada – the equivalent of more than two major floods every year – representing almost 40% of all natural disasters ever recorded in Canada. This means floods occur more than twice as often as the next most-common disaster.[2]

The changing weather, in turn, generates growing economic losses for Canadian families and governments. While the availability of insurance for water damage in Canada is limited, insurers are already shouldering much of the associated losses.

For six years in a row, Canadian P&C insurers have suffered losses of close to or at $1 billion every year. In 2013, that figure reached $3.4 billion.[3] Water-related damage caused the majority of these insured catastrophic losses, and was compounded by aging sewer and stormwater infrastructure that is increasingly unable to handle today's increased volume of precipitation. As a result, water damage has now surpassed fire as the number 1 cause of home insurance loss across the country.

The purpose of this paper is to examine best practices and available models for managing the financial impact of floods. The paper (i) identifies key issues specific to flood risk management, (ii) evaluates international experience with public and private flood-insurance programs, and (iii) draws out lessons for Canada's approach to the financial management of flood risk and the role of insurance.

Editorial Note

At the time of publishing, the G8 group of countries has effectively become the G7+1 due to the suspension of Russia from its membership.

Because most of the literature that IBC reviewed to prepare this report and the cited references refer to the G8, and solely for the purpose of maintaining clarity and consistency in our literature review, we continue to refer to this group as the G8 group of countries.

Issues with the Financial Management of Flood Risk

Of all natural disasters, floods are the most frequent, affect the most people worldwide and cause the largest number of fatalities and the largest economic losses.[4] Moreover, because of the challenge in insuring flood risk and the low rate of flood insurance take-up (even in countries where a national flood program does exist), most of these economic losses remain uninsured and, hence, are absorbed by governments and taxpayers.

The financial management of flood risk is increasingly problematic due to the combination of several trends: the growth in population and asset values, the concentration of urban and industrial development in flood-prone areas, the onset of more violent weather patterns, and the increase in the vulnerability of private structures and public infrastructure due to obsolete building codes and under-investment in risk mitigation measures. Taken together, these trends make adaptation to flood risk a priority.

What Insurers Mean by "Flood"

In Canada, there is no unequivocal definition of overland "flood," and the term is often used somewhat liberally. In principle, floods are best categorized based on their (a) causes and (b) locations.

There are five main underlying hazards that can generate overland floods:

Spring snow-melt runoff – the melting of the accumulated winter snowpack

Storm rainfall – localized, extreme rainfall that can generate, especially when combined with impervious soil and/or inadequate draining infrastructure, extreme stormwater runoff

Tidal flooding – a combination of low-pressure weather systems and peak high tides can raise water levels in rivers, lakes and oceans to the point where water defences are breached

Natural dam failure – the sudden release of water flow resulting from the failure of temporary natural dams caused by ice buildup (i.e., ice jams), landslides, moraines and glaciers

Structural failure – the sudden release of water flow resulting from the failure of man-made engineered flood defences and water control infrastructure (e.g., dams, levees, dikes)

There are three main types of floods based on location:

Fluvial (i.e., riverine) flooding – occurring when, in the flood plains of a river, a combination of the causes noted above result in the capacity of watercourses being exceeded, with consequential river overflow

Urban (i.e., pluvial) flooding – occurring when, in an urban centre, surface and underground infrastructure is unable to drain excess water flow generated by a combination of spring snow-melt runoff and stormwater runoff

Coastal flooding (i.e., storm surge) – generated by the combined action of wind, waves and high tides – including the effect of tsunamis – along the coast of large lakes and oceans

Compensation through insurance

In Canada, while there is insurance to cover water-related damage, comprehensive residential coverage for overland flooding is not yet available across the country and for all water-related risks.

Insurers provide residential coverage by endorsement for damages caused by sewer backup (in Quebec, the endorsement coverage also includes seepage and rising of the water table). Moreover, overland flooding is covered through automobile insurance as well as through commercial property policies.

As a result, although flood is typically not covered under residential insurance, insurers often end up paying for a significant portion of associated losses. The reason for this is twofold.

First, often two different perils – one covered by the policy (e.g., sewer backup) and one excluded from coverage (e.g., overland flooding) – can act together to cause damage or loss. In these cases, it has been difficult to ascertain to what extent the resulting losses were caused by the (un)insured peril, leading insurers to compensate damages that would not have otherwise been covered under the policy.

Second, in the event of a major flood or other natural disaster, it is not uncommon for insurers to lift certain policy exclusions and offer policyholders ex-gratia compensation, above what would be required by the insurance contract, to avoid reputational damage and potential political pressures.

The flood events of 2013 have made these challenges apparent, and insurers have since taken steps to further clarify the distinction between the types of water damage that are and aren't covered by a homeowner's policy.

Despite this, losses suffered by homeowners from overland flooding are not, technically, deemed insurable for several reasons.

The key issue is that, unlike most other perils, flooding does not lend itself to the economics of insurance. Insurance, by its very nature, works well for random, uncertain risks that are not correlated. Flood risk is the opposite: it is easily predictable because the same properties on the same floodplain tend to flood at periodic, recurrent intervals. And when it happens, flooding affects a large pool of properties at the same time.

This, in turn, has three negative consequences.

First, predictability leads to adverse selection, meaning that only high-risk individuals, knowing that they are likely to suffer flood losses, will seek out insurance. As a result, the basic insurance principle of diversification through risk pooling no longer applies. Moreover, frequent repeat claims affecting a large portion of the pool would occur, which would necessarily lead to high – often unaffordable or non-commercially-viable – premiums.

In other words, flood insurance is hard to offer and, when it is available, it is naturally expensive and only purchased by a few individuals.[5] Under these circumstances, insurers can only choose between charging actuarially sound but unaffordable premiums, or not offering flood coverage at all.[6]

Second, a significant portion of flood-related losses is directly attributable to under-investment in public infrastructure, poor asset management plans, obsolete building codes and ineffective land use planning. Unless governments address these basic issues, the current environment in Canada is not conducive to widespread availability of overland flood insurance coverage.

Fortunately, one of the main obstacles to the insurability of flood risk – namely, the predictability of flooding – is also key to the success of public infrastructure investment and land use planning. That is, the fact that floods reoccur periodically in the same places means that targeting these locations with risk mitigation investment is effective in reducing the frequency of flooding and its associated financial cost.

Third, the current state of flood mapping in Canada is inadequate. Governments and insurers need to have an advanced understanding of flood risk, albeit for different purposes and to different degrees of accuracy. They need to identify risk zones for zoning and urban planning purposes, evaluate the vulnerability of critical infrastructure, and be able to quantify and price the flood risk that individual policyholders are exposed to.

Flood hazard maps represent the minimum requirement for establishing a sound risk management culture. In Canada, mapping data is available across the country from conservation authorities; municipal, provincial and federal governments; and a selection of commercial vendors. However, available maps are often not up to date and not of sufficient resolution and quality. These maps haven't been developed to a common and consistent standard across the country, typically exclude urban (i.e., pluvial) flood risk and often assess only a single return period. For all of these reasons, the current state of flood mapping in Canada is inadequate for the assessment of flood risk except at anything more than an aggregate level. Accurate flood maps need to be developed as the first step in any serious government strategy for the management of flood risk.

The Arithmetic of Flood Insurance Premiums

Individual insurers have their own approach to pricing flood risk based on different methodologies, risk assessment tools and commercial strategies. However, the basic arithmetic of insurance still holds. Here is a stylized example of the constraints within which flood risk typically needs to be assessed.

Property value
$500,000

1-in-50
year floodplain

⋮

$500,000
x 0.25

=125,000
÷ 50

=**$2,500**
a year
for flood
coverage

Imagine a property that is worth $500,000 and located within a 1-in-50 year floodplain. Assume that a typical flood – given the characteristics of the floodplain and the vulnerability of the property being insured – would cause damage worth approximately 25% of the property value. The expected loss from this policy, when the flooding event occurs, is therefore $125,000, which translates into an annualized best estimate of loss of $2,500 (given that each year there is a 1/50 probability of a $125,000 loss).

As a result, even if the insurer set premiums equal to the best estimate of loss (i.e., without incorporating any margin for administrative/operating expenses or profit) the homeowner would have to be charged a premium of at least $2,500 a year just for flood coverage, in addition to the "base" home insurance premium charged for standard coverage.

For other perils, the insurer is typically able to pool together several properties within the same portfolio, under the assumption that not all properties would suffer a loss at the same time, which allows for risk diversification and hence for a reduction in the required average premium. However, when a floodplain floods, all properties are affected at the same time, reducing the diversification benefit. This explains why risk-based premiums for properties in floodplains are, by nature, expensive.

Compensation through government programs

The limited insurability of flood risk in Canada places the burden for post-disaster reconstruction and recovery on homeowners and taxpayers who are funding disaster relief spending from federal, provincial and municipal governments.

The role of taxpayers becomes clear when examining spending on the Disaster Financial Assistance Arrangements (DFAA) program. Between 1970 and 2013, there were 208 disasters that triggered federal financial assistance under DFAA. Of these, 116 were due to overland flooding (generally, fluvial/riverine flooding) and an additional 60 to 70 (depending on definitions) events were due to storms that are likely to have caused water-related damage associated with flooding.[7]

During these 43 years, the average number of DFAA events has increased threefold – from three disasters per year in the 1970s, to nine disasters per year in the first four years of this decade. And the cost of flood disasters to the federal government has increased by an even greater magnitude. Since the 1970s, federal payments on flood assistance total $6.2 billion – or 70 to 80% of total DFAA spending. These costs have more than quadrupled in 40 years, swelling from a cumulative $300 million in the 1970s, to $1.2 billion in the 2000s, and a staggering $3.7 billion in the first four years of this decade. Annual DFAA spending on flood recovery has also followed a similar trend, jumping from an average of $30 million a year in the 1970s, to $124 million in the 2000s, and almost $1 billion a year during the past four years.[8]

The recent restructuring of the DFAA program has partially redistributed the responsibility for disaster financial assistance by devolving more of these costs to provincial tiers of government. However, taxpayers still remain the primary source of finance for these costs, and the very same trends that are increasing insured losses will also increase economic, uninsured losses borne by governments and taxpayers. That's why federal and provincial governments across Canada have recognized that there needs to be a change in the way Canadians prepare for flooding events and other disasters, and that a partnership with the insurance industry is critical to implement a national solution to the flood problem.

Case Studies

Every country around the world has had to wrestle with the issues discussed above that make providing flood insurance problematic. The approaches developed by Canada's international counterparts involve various combinations of insurance and government relief. There are approaches that are fully private, fully public or in between; that make flood insurance voluntary or mandatory; and that offer flood insurance on its own or as part of a bundle of several types of coverage.

This section focuses on other G8 countries' provisions for flood insurance to gain insights into ways flood coverage could be offered in Canada. Many different financial management models have been developed – with varying degrees of success. Each model provides important lessons for how Canada can adapt its response to flood management.

In general, the approach to the financial management of flood risk can be categorized based on six variables:

1. Private vs. publicly administered programs
2. Voluntary vs. mandatory insurance take-up
3. Optional vs. bundled coverage
4. Risk-based vs. government-mandated pricing
5. Policyholder-funded vs. taxpayer-funded subsidization of high-risk properties (or neither)
6. Government as insurer vs. enabler of insurance

These variables, in turn, have direct implications for insurance take-up rates and will affect which stakeholders will ultimately bear the lion's share of flood-related financial losses.

Private models are market-based, with government intervention typically being limited to investment in risk assessment and risk mitigation initiatives and with insurance pricing typically being risk-based. Public models are characterized by a strong government involvement in the provision, funding and design of flood insurance. In these cases, governments typically set prices and terms of coverage, making these systems more akin to a social assistance program than to insurance.

In some cases, flood coverage is optional and available as an additional endorsement on a standard (i.e., fire and theft) homeowner's policy on payment of a separate premium. In other cases, coverage is bundled as part of a package inclusive of other perils. There are also instances in which coverage can be both optional and bundled. Indeed, it may be automatically included in a standard homeowner's policy (making it virtually mandatory), or it may be bundled with other optional perils (e.g., earthquake and other natural disasters).

International Flood Insurance Programs at a Glance

G8 countries other than Canada

	Model	Purchase	Packaging	Take-up (residential)	Pricing	Subsidization	Government focus	Financial impact mainly borne by
France	Public	Mandatory	Bundled (with other catastrophes)	100%	Government-set	Both taxpayers and policyholders	Insurance Funding	Taxpayers
U.S.	Public	Voluntary	Optional (add-on)	20–30%	Government-set	Primarily taxpayers	Insurance funding and provision	Taxpayers
Germany	Private	Voluntary	Optional (add-on)	25–30%	Risk-based	None	Mitigation and zoning	Policyholders
Italy	Private	Voluntary	Optional (add-on)	<10%	Risk-based	Taxpayers (indirectly)	Mitigation	Taxpayers
Russia	Private	Voluntary	Optional (add-on)	<5%	Risk-based	—	—	—
Japan	Private	Voluntary	Bundled (with comprehensive homeowners policy)	40%	Risk-based	Policyholders	Mitigation	Policyholders
U.K.	Private	Voluntary	Bundled (with homeowners policy)	95%	Risk-based	Policyholders	Mitigation, mapping and zoning	Policyholders

Notes: Take-up based on residential coverage. Figures for commercial property are typically higher. No additional information for Russia was available.

Germany

In Germany, flood insurance is privately offered as a bundle that includes other natural disasters, and is available to policyholders as an optional endorsement to standard homeowner's policies. Flood is the major peril insured under this optional natural catastrophe coverage, which includes both fluvial and pluvial flooding but excludes storm surges.

The German flood insurance scheme is a private market-based system, largely deregulated, with no backing from government and with private insurers purchasing reinsurance in the international market.

Insurers set policy terms, prices and deductibles independently and based on risk. As a consequence of risk-based pricing, the vast majority of properties are insurable although some may not be. The take-up rate of natural disaster coverage (including flood coverage) is estimated at 30%.[9]

Adequate risk pricing was made possible by government action to forbid floodplain development in risk zones and by an upfront investment to create a nationwide flood mapping tool (known as ZÜRS), which the German Insurance Association (GDV) developed to help insurers assess risk. ZÜRS provides insurers with a zoning system for flood, backwater and heavy rain risks. The system is based on the following four risk zones.

Risk zone	Return period	Insurance availability
Very low	>200 years	Insurable
Low	50–200 years	Insurable, conditionally on mitigation measures
Moderate	10–50 years	Insurable, conditionally on mitigation measures
High	<10 years	Uninsurable

Source: Adapted from (Swiss Re and ICLR 2010) *and* (Consorcio de Compensacion de Seguros 2008)

The risk zones are used by all insurers to determine insurability (and price). The majority of properties are located in the very-low-risk zone, approximately 10–12% of properties are in the low-risk zone, and only 3% are in the moderate- or high-risk zones.

Italy

In Italy, flood insurance is available through the private market and can be purchased as an add-on to residential fire policies. This optional product is bundled with earthquake coverage. The flood coverage includes both fluvial flooding and torrential rainfall damages. Additional protection is also provided for landslides that result from rising river waters.

Residential take-up levels are low, at less than 10% of countrywide property values. This is not surprising given that overall property insurance take-up is also low, at approximately 35%.[10]

This low insurance take-up is primarily explained by cultural and institutional reasons. In particular, there is a widespread belief that it is the government's responsibility to compensate losses due to natural disasters. Following natural catastrophes, the Italian government historically intervenes with financial support or ad-hoc legislation.

Russia

In Russia, insurance for flooding is provided by the private market as an optional coverage.

Qualitative, anecdotal evidence suggests that the insurance product is rather expensive. Cost pressures, combined with a widespread cultural reluctance to purchase non-mandatory insurance products, generally leads to low take-up rates (only 5% of households have basic property insurance).

Japan

In Japan, private flood insurance coverage was introduced in the mid-1980s. This was part of a government-sponsored flood risk management initiative built on the understanding that for private flood insurance to flourish, flood risk had to be mitigated first.

From the 1960s to the 1980s, Japan saw significant public investment in risk mitigation measures, with a large share of the national budget – ranging from 8% in 1961 (equivalent to 1.5% of the GDP) to 4.5% in the late 1980s (equivalent to 0.5% of the GDP) – invested in disaster risk reduction activities.[11]

These investments were able to bring flood risk under control. At that point, residential flood insurance coverage was introduced by extending standard homeowner's policies to cover damage from typhoons. As such, flood coverage is not available as a stand-alone product but can be obtained as part of a standard homeowner's policy.

Through this approach, flood losses are now compensated, albeit with a significant degree of co-insurance (i.e., insurers compensate for up to 70% of flood damage, with the remaining 30% resting on individuals[12]) to maintain incentives for investment in risk reduction measures.

Although coverage has been incorporated as part of comprehensive homeowner's policies, take-up rates for flood coverage remain relatively low.

The United Kingdom

In the U.K., flood insurance is privately offered and automatically included in standard homeowner's policies. As such, coverage is virtually mandatory and the vast majority of households are covered for flood damage. However, the current system is unsustainable and is being reformed.

Since 1961, flood insurance has been governed by a series of informal arrangements between the insurance industry and government, beginning with a "gentlemen's agreement" whereby insurers agreed to offer coverage to all properties regardless of risk while government committed to risk mitigation and infrastructure investment.

The initial setup proved unsustainable, largely due to a worsening of weather trends combined with insufficient investment in water infrastructure. The agreement was amended by a series of Statements of Principles. The latest amendment limited insurers' liability by establishing that coverage in areas with a flood probability greater than 1-in-75 years will be maintained only in the presence of new investment in mitigation infrastructure.

Although this is a private market system, both government and individuals have clear roles to play. Government is an enabler of insurance, by providing basic flood mapping, adequate flood control infrastructure and stringent land use planning. Consumers play their part by paying risk-based premiums and, in some cases, by investing in risk mitigation measures to maintain insurability.

Despite the recent amendments, it had been known for some time that the arrangement was unsustainable and would not be renewed. The reason is twofold. First, existing insurers were required to retain high-risk properties, while this didn't apply to new market entrants. Second, the agreement called for government to invest in mitigation, and this investment has not been at the level insurers had expected.

Insurers and government reached a new agreement (known as Flood Re) on June 27, 2013, and the broad legislative structure is in now place. The regulations governing the operations of Flood Re are expected to be tabled following the 2015 U.K. general elections.

In essence, Flood Re is a risk sharing pool, supported by a government commitment to backstop excess losses, which will be operated and financed by insurers as a not-for-profit fund to subsidize flood coverage for high-risk properties. Flood Re was created to ensure availability and affordability to high-risk properties, and to enable a sustainable transition to a risk-based pricing environment over the planned 25-year existence of the Flood Re pool.

Continued real estate development in flood-prone areas, combined with severe under-investment in flood defence and water infrastructure, meant that risk-based premiums for coverage to high-risk properties were becoming unsustainably costly. Addressing the affordability issue required artificially capping premiums for high-risk properties and subsidizing the difference (between risk-based and artificially capped premiums).

Flood Re is a way to explicitly provide such subsidization, by ceding high-risk properties to a risk sharing pool and supplementing this pool with additional revenue from a levy charged to all other policyholders.

Flood Re targets only high-risk properties. Flood insurance for other, non-high-risk properties will remain privately offered. Eligible high-risk properties have been identified through risk mapping (there are between 300,000 and 500,000 properties nationwide, equivalent to approximately 2% of the total properties in the U.K.) and are tracked in a national registry. Homes built after 2009 have been excluded from the scheme to avoid encouraging unwise building in high-risk areas.

Flood insurance coverage will continue to be bundled with home insurance coverage. Insurers will be required to offer coverage to high-risk properties (under their own policy terms), and they can choose to do so independently or by ceding the policy to the Flood Re pool.

- If the risk-based premium the insurer would ordinarily charge for a given policy exceeds the applicable price ceiling, the consumer is charged only the capped price. The insurer then cedes that policy (100% of its capped premium and associated risk) to Flood Re.
- If the premium the insurer is willing to charge is less than the applicable price ceiling, the insurer may choose to retain that policy.

To ensure affordability, the scheme sets out price ceilings for eligible (high-risk) flood insurance policies. The ceilings are adjusted using Council Tax bands (i.e., property tax). This transparent process will allow consumers to know up front the maximum premium they may have to pay if they choose to buy flood coverage.

Because the pool is a concentration of bad risks that are charged less-than-actuarially-sound premium rates, it will always operate at a loss. To mitigate this, the Flood Re fund is topped up through additional income from a levy charged to policyholders, amounting to £180 million per year (equivalent to a £10.50 levy on each policy). This amount is said to be equivalent to what policyholders already implicitly pay to cross-subsidize high-risk properties.

To implement the system, the insurance industry is paying £10 million in start-up costs. Flood Re will also purchase reinsurance to cover losses up to a 1-in-200-year flood event level – and participating insurers will not be liable for losses beyond this level. According to the latest Memorandum of Understanding between government and the ABI, should an event generate industry losses in excess of this level, the government will work with Flood Re and the industry to determine how available resources should be distributed to policyholders.

The role of government will remain limited to:

- Setting the price ceilings for flood coverage, which are anticipated to increase over time;
- Providing financial support in the event of extraordinary catastrophic losses exceeding the capacity of the pool; and
- Investing in new and improved flood defences by spending £2.3 billion over the next four years and committing additional investments over the following six years. The government anticipates that flood risk will be reduced by 5% and that over 300,000 properties will be protected by 2021. However, stakeholders – including the Committee on Climate Change, the National Audit Office and the ABI – have pointed to an estimated £500 million shortfall in the required spending on flood defences.

The United States

In the U.S., flood insurance is available through a federal program – the National Flood Insurance Program (NFIP). The program was established in 1968 as a joint initiative by private insurers and all tiers of government. The federal government – through the Federal Emergency Management Agency (FEMA) – is responsible for administering the program.

Homeowners can purchase NFIP coverage only if they live in NFIP-approved communities located within 1-in-100 year floodplains, referred to as Special Flood Hazard Areas (SFHAs). For a community to be approved, it must commit to specific floodplain management requirements set by FEMA, which include floodplain development and zoning. Coverage is optional, although it is mandatory for mortgage holders located in SFHAs.

FEMA sets the premiums based on Flood Insurance Rate Maps (FIRMs). Properties that were developed in SFHAs before being identified as high-risk in this mapping system are provided insurance at subsidized premium rates, at a discount as high as 40% of the risk-based rate.[13] Those that were developed after the creation of flood maps pay actuarially sound rates (as determined by FEMA).

In exchange for an expense allowance, private insurers write and service NFIP policies under their own brand. This enables NFIP to leverage insurers' expertise in marketing, underwriting and claims handling, without insurers having to retain any of the associated risk.

Because the NFIP pool is based on selecting only bad risks and heavily subsidizing coverage, the system, by design, cannot be financially self-sustainable. It continues to operate thanks to a backstop guarantee by the federal government. This reliance on public funds to meet unfunded liabilities, instead of leveraging risk transfer through international reinsurance markets, has resulted in compounding public debt. This is further magnified by the fact that flood maps are out of date and floodplain management programs are often not enforced, meaning that the premium rates set by FEMA are likely below their actuarially sound level. Recent moves to try and move prices closer to risk-based levels have faltered due to political pressure. Currently, FEMA/NFIP has debt of approximately $23 billion USD and is unlikely to be able to repay it.[14]

France

In France, flood insurance is offered as a mandatory bundle that includes other natural disasters, through a government program (Cat Nat) established in 1982. The program combines private insurance with public reinsurance provided by the Caisse Centrale de Reassurance (CCR), a state-owned reinsurer supported by a government backstop.

The government sets Cat Nat premiums at a uniform rate across France, without any differentiation based on risk exposure. Cat Nat premiums are charged to consumers as an additional percentage on their standard property insurance premiums, which is currently set at 12%. All policyholders with standard homeowner's insurance are required to participate.

For a claim to be eligible under the Cat Nat scheme, both national and local governments must declare a state of emergency. Once this happens, government-guaranteed reinsurance funds from CCR become available.

Reinsurance with CCR is not compulsory, and primary insurers can choose to rely on international reinsurance markets instead. There are, however, strong incentives to reinsure with CCR, because the reinsurance premiums charged are artificially low and because it can offer unlimited coverage with low solvency and liquidity risk owing to the government's backstop guarantee.

The main drawbacks of the French model are related to the public nature of rate setting and risk transfer.

Public rate setting means that premium rates are set by government rather than based on risk. Not only does this remove any incentive for risk mitigation investment (both by individuals and by local authorities), it is also rather unfair as it effectively forces low-risk consumers across the country to subsidize those at higher risk of disaster (although the offering of a multi-peril, all-catastrophe bundle ameliorates fairness concerns). As such, the system is more akin to a welfare or risk redistribution program than insurance.

Public risk transfer results in reinsurance rates (through CCR) being artificially low and reinsurance payouts being state-guaranteed, both of which create a strong incentive for primary insurers to reduce their retention rate (i.e., to increase the share of risk ceded to CCR), especially for high-risk portfolios.[15] This, in turn, places considerable stress on CCR and, hence, on taxpayers.

Best Practices and Lessons Learned

The role of insurance

In many developed economies, there is a role for insurance in the financial management of flood risk. This has several advantages over relying on government disaster relief programs. There are two reasons for this. First, while the objective of government relief programs is to reduce hardship by providing basic financial support, insurance seeks to fully compensate consumers by restoring them to their pre-disaster position. Second, while government relief programs typically encourage risky behaviour, insurance premiums are a function of the underlying risk, therefore creating a strong incentive for consumers to undertake risk reduction measures.

However, unlike standard homeowner's insurance, which is rather common, the take-up of flood insurance is typically very limited even in countries where an established flood insurance market exists. As IBC's analysis indicates, take-up rates fluctuate considerably with each country's experience, but are frequently within the 10% to 20% range unless the product is mandatory or bundled with other perils.

Adverse selection – when flood coverage is demanded only by high-risk consumers – is the main reason for the failure or fallibility of many of the international models. Because of adverse selection and the predictability (or non-randomness) of flood risk, risk-based premiums tend to be unaffordable. This leads to low take-up rates, which, in turn, reinforce the adverse selection problem.

This is particularly true of insurance schemes based on optional coverage. By contrast, where flood insurance is provided as part of a wider bundle, adverse selection and the resulting high premiums are greatly reduced. In fact, evidence from international experience suggests that flood insurance works best when bundled with other perils.

One of the main downsides with bundled coverage is that it forces low-risk consumers to subsidize high-risk ones (which is what allows for lower premiums). However, to the extent that most of the bundled product is priced based on risk, the outcome can still be equitable as low-risk consumers will be charged lower premiums overall. Moreover, the erratic severe weather patterns experienced in recent years – where locations previously deemed low-risk have suffered large flood losses – suggest that more properties than previously thought are likely to experience flood damage in the future, further reducing any unfairness inherent in the bundled approach.[16]

That said, the experience of countries such as Germany indicates that a relatively high rate of take-up can be achieved even in the absence of mandatory or bundled coverage, as long as there is a well-designed system of incentives supported by a sound risk management culture. Importantly, this includes an environment where private insurers have freedom to charge actuarially sound rates[17] and where government relief programs do not discourage the uptake of private insurance coverage.

The role of government

As a comprehensive Organization for Economic Co-operation and Development (OECD) study determined, "if the private insurance industry remains the main provider of flood coverage, it is essential for [government] to provide the appropriate conditions for managing flood risk."[18] This implies that government action should focus on:

- Promoting risk mitigation measures by means of direct investment in infrastructure and through implementation of early warning systems and strict enforcement of zoning, land use planning and floodplain development regulation;
- Increasing public education and awareness to ensure homeowners understand the risk they face and what they can do to mitigate it, and are financially prepared; and
- Addressing the issue of high-risk properties by either providing subsidies to households for whom insurance is unaffordable, or through financial relief programs that specifically target high-risk properties that may be commercially uninsurable.

In addition to these three key roles, developing a sound risk assessment platform through up-to-date flood maps is paramount. Because of increasingly severe and volatile weather trends, the immediate and long-term management of flood risk must hinge on a reliable analysis of associated losses. Throughout history, flood insurance has typically been introduced only in countries that have developed a sound flood risk management culture[19] – including techniques for an advanced assessment of the risk and ongoing investment in risk mitigation infrastructure.

For example, official flood risk zones that are developed based on a common understanding of risk – such as those used in Germany – are important to ensure equitable treatment of consumers. Such strategies establish a shared understanding of what is or isn't commercially insurable, setting appropriate expectations for consumers and governments alike.

While this strategy doesn't necessarily imply that governments should develop flood maps for use by insurers (as the underlying requirements are often different), governments should at least develop flood maps that can be relied on for land use planning purposes. Governments should also make the data available to the private market to ensure widespread understanding of risk.

Finally, even when an insurance scheme is designed to address the affordability issue of high-risk properties (for example, by bundling coverage), insurance for properties where there is a very high likelihood of frequently recurring losses may not be commercially viable.[20] In these cases, alternative government-sponsored risk management approaches – ranging from targeted investment in risk mitigation, to relocation of the property outside the high-risk area and the use of government relief funds – may make more economic sense.

What this means for Canada

A frequent question that arises is: Why is Canada alone among G8 countries in not offering flood insurance coverage?

First, while residential flood coverage is not available across the country and for all water-related risks, Canadian P&C insurers already cover water-related damage, including sewer backup, through both residential and commercial policies, and overland flooding, through automobile and commercial property policies. As a result, Canadian insurers have suffered losses at or near $1 billion for five years in a row – and in 2013 that figure was a staggering $3 billion or more – making water claims the number 1 cause of home insurance losses across the country.

Second, simply having a flood insurance program is not enough. It needs to be a program that works, and many of the international schemes that we have examined simply don't work. None of them offer an effective "off-the-shelf" solution that could be implemented in Canada.

IBC's review has highlighted two important distinctions between alternative flood insurance models.

First, many of the schemes are not financially sustainable. Countries such as the United States implemented a program that, by design, is financially unsustainable leading to ballooning public debt in recent decades.

Second, many of the international schemes reviewed enable compensation but at a cost that may be unaffordable to some. The key to designing a financially sound flood program is to price coverage based on actual risk. That, however, means that high-risk consumers will pay high premiums.

Affordability for all consumers, including those at highest risk, comes at a cost. If coverage for high-risk individuals is available at premiums below the level that would be necessary based on actual risk, that difference will have to be made up through one of two approaches. It must either be spread among all policyholders by bundling the product – in which case low-risk policyholders subsidize high-risk ones – or it must be paid through government subsidies – in which case taxpayers subsidize high-risk policyholders.

Whether residential flood insurance will ever become commercially viable in Canada, the international experience clearly points to four preconditions that are essential to establish a strong flood risk management culture:

1. There must be accurate, up-to-date flood hazard mapping to allow all tiers of government – as well as insurers, developers and other key private sector stakeholders – to make smart decisions about mitigation investment, urban development and flood risk management.
2. There must be ongoing, targeted investment to build and maintain resilient flood defences and sewer and stormwater infrastructure.
3. There must be widespread risk awareness and a sound understanding by all stakeholders – including governments, communities and individuals – of the physical and financial consequences of flood risk and of the tools that are available to ensure Canadians are prepared.
4. There must be limited recourse to government revenue to finance post-disaster compensation to ensure that individuals face effective risk-mitigation incentives, and the financial burden on taxpayers is minimized.

Although these basic preconditions are not in place today, there are growing signs that Canada is moving in the right direction.

The 2014 Economic Action Plan announced a proposal to develop a National Disaster Mitigation Program (NDMP). The objective of the NDMP is to take a proactive approach to disaster risk management and to reduce the impact of natural catastrophes on Canadians.

In addition to generating new investment for disaster protection and mitigation initiatives, the NDMP aims at prioritizing measures to identify and mitigate the impacts of floods, including the strain on government finances and the Disaster Financial Assistance Arrangement (DFAA) program.

These initiatives are consistent with Public Safety Canada's all-hazards approach to emergency management, which sees prevention and mitigation activities as one of its four pillars. These activities are aimed at eliminating or reducing the risks of disasters in order to protect lives, property and the environment, and reduce economic disruption. Mitigation includes structural measures. such as construction of floodways and dikes, and non-structural measures, such as building codes, land-use planning and insurance incentives.

The Economic Action Plan also announced the government's plans to consult with the industry to explore options for a national approach to residential flood insurance and insurance issues arising from natural disasters more generally, noting that Canada is the only G8 country without residential flood insurance coverage.

Recently, individual insurers have started taking steps to address this coverage gap by introducing, or exploring the introduction of, some type of residential overland flood insurance product.

Nevertheless, it remains clear that Canada and its P&C insurance industry need a more comprehensive and institutionalized solution to tackle the pressing challenges faced by high-risk properties. For this reason, IBC welcomes the federal government's recent commitment to work with the industry to develop a national approach to flood insurance – an approach that, from the industry's perspective, will need to address the preconditions identified above and identify clear roles and responsibilities for all stakeholders.

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Terrorism Risk and Insurance

A LOOK AT THE INSURANCE INDUSTRY'S RESPONSE TO CHANGES IN TERRORISM

February 2017 | By Ingrid Sapona

Terrorism has evolved in a variety of ways. In the 1990s and early 2000s, most terrorism attacks that made the international news were perpetrated by organized, recognized groups like Al Qaeda, Hezbollah, and so on. The 9/11 attack in the U.S. is an example of such terrorism. More recently, terrorist attacks have been carried out by lone attackers (or small groups of attackers), for example, the Boston Marathon bombing and the October 2014 attack on Parliament Hill in Ottawa). Such attacks are typically not organized or directed by a particular terrorism organization. Instead, they are often described as "inspired by" some terrorist group's rhetoric or ideas. Often these terrorists are individuals who are self-radicalized, meaning these individuals were drawn to a known terrorist organization through the writings and videos released by known terrorist organizations.

The methods used by terrorists and the targets have also evolved. With 9/11 style attacks, terrorist organizations often chose high explosive attacks on high-value targets or symbols. As Aon points out, armed attacks have overtaken bombings as the main terrorist tactic in Europe. From 2010-2015 the vast majority of attacks in Western countries were perpetrated by bombings. Since the beginning of 2015, however, 52% of attacks in western countries have been armed attacks, while 30% have been bombings. And, when bombs have been used (for example the March 22, 2016 attacks in Brussels at the airport and at a metro station), they are often smaller bombs, making it harder to detect through purchasing of bomb-making materials. Another noteworthy phenomenon has been the increased use of concurrent attacks (like the March 2016 Brussels attacks), sequential targeting, and mixing of suicide devices with active shooter attacks. In terms of targets, more recently, terrorists have targeted civilians rather than the state. According to Aon, terrorists "appear to be placing an increasing emphasis on targeting societies rather than states, and aiming to inflict more casualties …." Indeed, "the venues of the worst attacks in 2015 were clusters of civilians: mass transportation, bars & restaurants, entertainment venues, hotels and tourist resorts." The Risk Advisory Group, which has partnered with Aon in creating a Terrorism and Political Violence Map since 2007, reports that during the first three quarters of 2016 they recorded 502 attacks against public gatherings. The geographic reach of terrorism is also evolving. The Middle East is still the most active region for terrorism, with 40% more attacks than the most active region of South Asia. But, according to Aon, though attacks have fallen in Western countries, 2015 was the most lethal year for terrorist violence in Europe in nearly a decade. Aon cites the Islamic State (IS) as the major driver behind the spread of instability far beyond the group's territorial control in parts of Syria, Iraq, and Libya, noting that "the group or its followers have mounted mass-casualty attacks against the United States, France, Belgium and Russia over the past year."

Terrorism insurance

The shift in terrorist focus from traditional targets like military, police, and government interests to civilians raises the risk of terrorism on businesses. Indeed, certain business sectors have been particular targets, including transportation, retail, extractive industries, critical infrastructure, and the financial sector. With terrorism attacks aimed at civilians, the direct damage to property is often relatively minimal, but high in terms of lives and suffering. As well, such attacks can bring indirect costs to businesses due to business interruption.

Terrorism is generally excluded from standard liability policies (like CGL policies). Given the evolution of terrorism and the increased possibility of a terrorist attack on civilian targets, businesses and organizations should be considering their exposure and taking steps to mitigate their risks. Obviously, terrorism insurance is one tool to transfer the risk. But, the take-up rate for terrorism coverage is pretty low in Canada, according to James Gregory, Regional Director of Aon Risk Solutions' Crisis Management group in Toronto. Though he did not provide specific statistics about the general take-up rate in Canada, Gregory noted that certain Canadian businesses definitely are concerned about the risks. "In fact, to the best of our knowledge, the largest aggregation of terrorism insurance in the word is in downtown Toronto," says Gregory. When asked why it might be that there's such a concentration of terrorism insurance coverage, Gregory suggests it is due to the relatively low cost of terrorism insurance.
Information about the take-up rates for terrorism insurance published by Marsh shows there's quite a variation depending on industry and region. According to Marsh, for example, in the U.S. in 2015, media companies have purchased property terrorism insurance at a higher rate than any other industry. The take-up rate for media companies was 79%. The next highest take-up rate in the U.S. was education (75%), hospitality and gaming (74%), health care (73%), financial institutions (71%), real estate (71%) and power & utilities (70%). Interestingly, in the U.S., the 2015 take-up rate for energy and mining was only 33% (down from 47% in 2013). In the U.S., take-up rate by region was pretty steady from 2012-2015: the rate in the Northeast was 72%, while it was lowest in the South (54%) and 57% and 59% in the Midwest and West, respectively.

Government responses

Insured losses resulting from the 9/11 event were about $32.5 billion. Because much of the financial cost ended up being borne by reinsurers, after 9/11 many withdrew from the market, and primary insurers ended up excluding terrorism from their policies. So, businesses were not able to purchase terrorism coverage. To "help ensure the continued widespread availability and affordability of commercial property and casualty insurance for terrorism risk, and to allow for the private markets to stabilize and build insurance capacity to absorb any future losses for terrorism events," in 2002 the U.S. Congress enacted the Terrorism Risk Insurance Act (TRIA).
TRIA required insurers to make terrorism insurance available for commercial property and casualty losses resulting from certified acts of terrorism and provided a "shared public and private compensation for such insured losses." In effect, "TRIA made the government an insurer of last resort; a reserve partner to help pay insurance claims resulting from large-scale terror attack … but only after affected businesses and

insurance companies have paid their insurance deductibles." As a result, in the U.S. insurers must offer terrorism cover in all property and casualty policies on terms that are materially similar to those offered for other risks.

TRIA was extended in 2007 and again in 2015 under the name: the Terrorism Risk Insurance Program Reauthorization Act of 2015 (TRIPRA). The key triggers for TRIPRA (and its predecessor TRIA) are that:
- the terrorist act must satisfy the definition of an "act of terrorism";
- the act must be "certified" by the U.S. Secretary of the Treasury with the agreement of the Secretary of State and Attorney General in consultation with the Secretary of Homeland Security, as qualifying within the Act's definition;
- the terrorism event must involve losses that exceed a threshold amount ($140 million in 2017).

Interestingly, to date TRIPRA has not paid out because no act of terrorism has been certified.

The U.K., France, Israel, and Spain all have mandatory terrorism pools, while about 20 other countries have elective pools. Pool schemes allow property insurers to extend terrorism coverage based on the rules of the legislation that establishes the pool. Pool Reinsurance Company Ltd. (Poole Re) is the U.K.'s version. It is an elective scheme set up in 1993 after various terror incidents perpetrated by the IRA that made it hard for insurers and reinsurers to provide traditional terror cover. According to Pool Re, to date it has paid out claims of more than £600 million. Pool Re's cover is on an "all risks" basis, including attacks involving chemical, biological, radiological, and nuclear (CBRN) devices to the full insured value. Cyber terrorism is still excluded, however.

There is no terrorism pool in Canada and Aon's Gregory doesn't anticipate one being established here because terrorism coverage is available. "Terrorism pools are typically set up when it's difficult to buy such insurance in the regular market. … here in Canada I don't think there's an appetite by the Canadian government to set up a pool because terrorism insurance is readily available in the market," Gregory says.

Defining terrorism

As with all insurance, the starting point for determining coverage is the definition – in this case, the definition of "an act of terrorism." When looking for coverage, insureds should always consider how the policy defines terrorism. Under TRIPRA, for example, the definition of what constitutes terrorism is restricted to an event that's certified by the applicable federal government authorities. If an act is not certified, it simply won't meet the policy's definition.

"From Aon's perspective, we've developed our own definition of what an act of terrorism is and it's quite broad. Under our definition it's an act committed for political, religious, or ideological purposes," says Gregory. Aon's standard policy wording also includes coverage for sabotage, which is basically a subversive act committed for political, religious or ideological purposes.

Standard definitions of terrorism do not cover political risks, losses resulting from strikes, riots, civil commotion, rebellion, revolution, war and insurrection, or cyber-terrorism. But, broader definitions are available. “You can get a broader policy that provides coverage for riots, strikes, and civil commotion. That would cover, for example, damage caused by protesters surrounding a G20 event,” says Gregory. “The broadest version available would include war, civil war, revolution and so on. You can also add NCBR – nuclear, chemical, biological, and radiological risk, but that’s very expensive and capacity is limited,” he says.

Terrorism coverage

Terrorism insurance can be bought for both first party and third party exposures. In Canada, businesses can take out standalone terrorism insurance or they can seek an endorsement to add it to their property policy. “Some insurers have treaty restrictions on their reinsurance that prohibits them from providing coverage for terrorism. In that case, they’d want a standalone policy,” says Aon’s Gregory.

By comparison, in the U.S., TRIPRA coverage is normally made available as part of an “all risk” property policy, but businesses can also purchase standalone property terrorism insurance. The most obvious benefit of a standalone policy in the U.S. is that the definition would not be limited to incidents that are certified by the federal government and that coverage can be bought for 100% of the losses incurred.

Another benefit of a standalone policy is that the limits available on standalone policies are often higher than might be available under an endorsement. Standalone policies can also have separate limits providing broader coverage for a specific location, for example, if a business had exposure in a part of the world potentially exposed to war that could be provided as part of a blended placement, coverage can also be purchased for multiple years. Coverage for business interruption can also be included. The wording for business interruption coverage would cover the specified period of indemnity set out in the policy.

Coverage enhancements available

As the types of terrorist acts are evolving, so too are the types of coverage enhancements being sought. For example, though the potential property damage from a terrorist attack might be relatively small (especially as compared to the property loss with the 9/11 attack, for example), the business disruption costs attributable to even a relatively small attack can be significant. If a government puts a region under curfew, or cordons off an area, for example, businesses in the area could be disrupted for an indefinite period.
Here are some of the coverage enhancements available:

Business interruption coverage – keep in mind that in the case of a terrorist attack, a business may not suffer direct physical damage but may end up being closed for a period because of a terrorist attack. Therefore, business interruption coverage claims that require direct physical loss or damage may not be sufficient.

Political violence coverage – this coverage can be separate, or part of a terrorism policy.

Extra expense for evacuating people due to a threat

Coverage for cancelled reservations

Coverage for cancelled events

Coverage for NCBR (nuclear, chemical, biological, and radiological risks) – the coverage is for incidents like anthrax and ricin attacks, viruses, and so-called dirty bombs, for example, where someone gets their hands on radioactive material and exposes others to radiation. Coverage for NCBR incidents is usually limited to a prescribed area, for example, a central business district, or perhaps within a 5-15 km (3-10 mile) radius of a specific location. The coverage is very expensive and not many insurers write it, according to Aon's Gregory.

Active assailant situations – this is a relatively new type of coverage in Canada, says Gregory. "This provides coverage for incidents where someone arrives on the insured's property with some sort of weapon and they are not politically motivated. Such policies pay for physical damage, costs related to psychological counselling of survivors, and loss of attraction. They even cover costs incurred to investigate threats made against the insured," he says.

Underwriting issues

At this point, there are no particular underwriting issues related to terrorism insurance. For first party coverage, underwriters look for a schedule of values. The schedule should include information about what the assets are and where they're located.

Pricing

Terrorism insurance is relatively inexpensive. Terrorism coverage premiums generally are determined as a percentage of the premium for property insurance, and it's "usually a small percentage of the premium," according to Gregory. The percentage varies based on the industry the insured is in and the region the coverage is for. The median premium for terrorism insurance for companies in the U.S. Northeast – the most expensive region in the U.S. – was $29/million in 2015. According to Marsh, in the U.S., companies in major metropolitan areas are likely to pay a higher premium for their terrorism coverage. Interestingly, Marsh believes that the trend is to for terrorism insurance premiums to decrease and coverage to improve.

Managing and mitigating terrorism risks

When it comes to managing terrorism risk, businesses need to understand and assess their exposure to terrorism and related risks. Determining the risk is becoming more challenging because:

- the bar to committing a terrorist act is lower than ever before, and
- the spectrum of impacts has expanded, as mass casualty attacks are increasingly perpetrated with weapons rather than bombings.

The range of factors a business should assess when determining terrorism risks include:

- The attractiveness of the business or location as a terrorist target – consider the nature of the business, the ownership, the location of the business, the number of people on the premises, the attractiveness of adjacent businesses, and so on.
- Exposures related to particular assets and physical facilities – consider the level of security, the accessibility of entries, how sturdy structures are, evacuation plans, and so

on.
- Financial exposures – consider the risk to capital, business disruption due to direct damage and from collateral damage, determine appropriate insurance limits and deductibles, and so on.

Businesses should also assess their crisis management framework in terms of its effectiveness in the event of a terrorist attack. For example, does the crisis management program address the investigation of threats, does it address evacuation procedures, does it address post-event psychological counselling for survivors, does it include an active shooter protocol, and so on.

There are a number of analytical tools and models that can help businesses assess their terrorist risk and determine how much terrorism insurance they need. Businesses can do the analysis themselves, or they can engage experts. Aon, for example, does Probable Maximum Loss (PML) assessments that involve quantifying and qualifying exposure to terrorism risk and such assessment can cover both potential property damage and potential bodily human costs. “PML assessments are a service clients pay for, but what they end up paying for the service can often be offset by premium savings they see as a result of purchasing a data-driven limit rather than guessing how much terrorism coverage they need,” says Gregory.

Conclusion

As Aon notes, terrorist attacks are now regarded as a foreseeable risk. While many businesses realize they may be exposed to property loss related to terrorism attacks, as terrorism has evolved, so have the risks. As a result, businesses should also consider their exposure to risks like business interruption due to terrorist acts, as well as first and third party exposures. For example, if a business doesn’t have an active shooter response protocol, or if it has one that is inadequate, it could face liability claims in the event of such an attack.

Businesses should work with brokers and risk experts to ensure they have realistically assessed their risks related to terrorism and to help them find ways of managing and mitigating the risks. Fortunately, the insurance industry’s response to terrorism has also evolved, so most Canadian businesses should be able to find relatively affordable terrorism coverage that meets their specific needs.

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KPMG, "**Property and Casualty Insurance Compensation Corporation (PACICC), The Actuaries' role in safeguarding the solvency of P&C insurers**," March 2015, Parts 1, 2, 5 and 7 (pp. 43-47 only).

Fair Benefits Fairly Delivered

A Review of the Auto Insurance System in Ontario

Final Report
April 11, 2017

By: David Marshall

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Introduction

OBJECTIVES AND SCOPE OF THE STUDY

In February 2016, I was appointed by Order in Council as a Special Adviser to the Minister of Finance to review and make recommendations as to improvements in the system of auto insurance in the Province of Ontario.

Auto insurance is compulsory for drivers in Ontario. The Financial Services Commission of Ontario (FSCO), is an agency of the Ministry of Finance that regulates insurers and approves most insurers' auto insurance rates.

Auto insurance impacts all consumers in Ontario as the cost and the coverage it provides impacts not only the over 9.7 million private passenger drivers and other road users, but also is a component cost of transportation for all goods and services in the province. There are approximately 60,000 injuries in motor vehicle collisions each year in Ontario. As a result, the price of auto insurance is of significant policy interest to the government.

Ontario is frequently criticized as having the most expensive auto insurance rates in the country. The government has been taking a range of actions to meet its commitment to rate reduction, including the passage of Bill 15, Fighting Fraud and Reducing Automobile Insurance Rates Act, 2014 and a number of regulation changes.

I was asked to provide advice to the Minister of Finance on the development of further initiatives to reduce claims costs and uncertainty in Ontario's auto insurance system. In developing advice, I was asked to focus on improving the efficiency and effectiveness of claims management in the system based on best practices in Ontario and other jurisdictions. In particular, I was asked to focus on:

- **Coverage options.** The option to give consumers more flexibility to buy coverage options that reflect individual needs, and the possibility of a lower cost auto insurance product focused on essential coverages as a means of providing additional insurance options for Ontario drivers.
- **Comparable systems.** Structures of comparable auto insurance systems in Canada.
- **Common traffic injuries.** The development and implementation of a successor to the current Minor Injury Guideline (MIG) based on the most recent medical evidence presented in "Enabling Recovery from Common Traffic Injures: A Focus on the Injured Person," a report developed for FSCO by a team of medical experts led by Dr. Pierre Côté.

- **Medical examinations and assessments.** Measures to improve efficiency and reduce duplication in the provision of the overall management and delivery of health care on behalf of auto insurance claimants and insurers in Ontario's auto insurance system.
- **Legal costs.** The nature and extent of legal fees currently incurred by individuals pursuing claims in Ontario's auto insurance system, the effectiveness of current rules in place to protect consumers from unreasonable fees and possible measures to improve transparency, competition and consumer protection in this area.
- **Dispute prevention.** Approaches to preventing disputes, particularly over accident benefits claims, in Ontario's auto insurance system. This could include further examination of the Honourable J. Douglas Cunningham's recommendations in the 2014 Ontario Automobile Dispute Resolution System Review Final Report (Cunningham Final Report) for further restrictions on lump-sum settlements of certain accident benefits claims and the need for individual insurance companies to establish internal review processes.
- **Engagement and education.** Strategies to engage consumers and health care practitioners regarding changes in the auto insurance system, including strategies to inform consumers regarding new coverage options, promote adoption of new evidence-based treatment protocols and minimize the development of disputes between claimants and insurers.
- **Evidence-based treatment protocols.** Adopting new protocols and minimizing the development of disputes between claimants and insurers.

CONDUCT OF WORK

In conducting my work, I examined extensive records and conducted research and interviews, including interviews and discussions with officials within FSCO, the Ministry of Finance and representatives of Insurance Companies and Associations within Ontario and other provinces (see Appendix I for full list). As well, I inquired into the auto insurance system of Alberta which has a similar private sector distribution system as Ontario and the systems in Saskatchewan, British Columbia and Quebec, which have various forms of public/private distribution systems.

I received significant support from the leadership and staff of FSCO without which I could not have completed my review. I would also like to acknowledge the value of the Superintendent's Report on the Three-Year Review of Automobile Insurance, completed in December 2014. In many instances, the Report was prescient in that it suggested lines of inquiry and possible improvements that anticipated my own findings and recommendations.

Executive Summary

Auto insurance in Ontario is mandatory. It comes in two parts. A no-fault part, (also called the accident benefits part) where benefits are provided whether or not a driver is at fault; and recourse to sue an at-fault driver for damages through a court action (also called the tort or bodily injury part). The insurance premium reflects the total cost of both parts.

Ontario delivers its program through private sector insurance companies. Alberta and Nova Scotia do the same. Other provinces (like Manitoba, Saskatchewan and British Columbia) run their insurance either exclusively or mostly through government agencies, while Quebec provides all the medical and rehab benefits through the province and allows private sector companies to sell insurance for damage to the car or other property.

Since it is mandatory for drivers to purchase automobile insurance, there is a corresponding responsibility on government to create a marketplace where fair benefits are fairly delivered, at a reasonable cost. This report examines Ontario's auto insurance marketplace and provides recommendations for improvement.

Overall, Ontario has one of the lowest levels of auto accidents and fatalities in Canada and the most expensive auto insurance premiums. Historically, periods of cost reduction have inevitably been followed by cost increases. What is more disappointing is that while the number of automobile accidents in Ontario – especially very serious ones – have consistently come down, the cost of claims has consistently gone up. Ontario also has one of the least effective insurance systems in Canada. It is filled with disputes and inefficiencies, and a very high percentage of premiums are being used to pay experts and lawyers and not going directly to injured persons.

The opportunity gap: Ontario's average auto insurance premium for 2015 at $1,458 per vehicle, represents a significant expenditure for the average Ontarian. That premium is 24 per cent higher than Alberta's, double the premium in Quebec and almost 55 per cent higher than the Canadian average, excluding Ontario. Ontario drivers pay about $10 billion in insurance premiums a year. If Ontario could achieve a premium level approaching the Canadian average of about $930 it would save Ontario drivers almost 40 per cent off its current level - about $4 billion a year or some $20 billion over a five-year period – that's the opportunity gap.

The value gap: No one in the system is actively managing medical care for accident accident victims. There are clear indications that accident victims are not receiving appropriate care, they are taking longer to recover and many report that they have developed permanent impairments from simple soft tissue injuries – that's the value gap.

The structure is flawed: Current trends do not indicate that the system will self-correct. Claim costs continue to rise while automobile accidents continue to fall. The main cause is not inefficiency or excess profits by insurance companies or the behaviour of claimants, providers or lawyers. It is the way the system is structured.

The goal of the government is to provide a guaranteed safety net for those injured in auto accidents. Guranteed safety nets work best when they are administered by a government agency, which is an administrative tribunal, with authority to interpret the governing legislation and set policy and practices. Private sector insurance companies work best when they can write policies with defined conditions and benefits. Ontario has devised a guaranteed safety net for victims of auto accidents and outsourced it to insurance companies without giving them the authority to decide how to deliver it.

The legislation is at once very broad and open to a wide latitude of interpretation and at the same time regulations are very prescriptive as to how insurance companies can deliver the product. This creates an opening for disputes as to interpretation on the one hand and restrictions on efficiency on the other. It is a structural flaw in the system.

The results are not good: There is little agreement as to what constitutes fair diagnosis and care for injuries. Consequently, many applications for benefits are rejected based on medical opinions obtained by insurance companies while claimants hire lawyers and generate countervailing medical opinions. Simple minor injury sprains and strains (80 per cent of claims) often take over a year to settle and incur high medical costs. Instead of a system that helps accident victims recover from their injuries, a significant portion of the system has been diverted into a cash settlement system in lieu of care. Each year about one third of benefit costs, some $1.4 billion – about $7 billion over five years – is being paid for competing expert opinions, lawyers' fees and insurer costs to defend claims – instead of going to treatment of injured parties.

The solution does not lie in reducing benefits. Fair benefits must be taken as the starting point in any recovery, and they must be delivered fairly. If these two conditions do not exist, the system will always fail to meet expectations. Nor does the solution, purely from a cost point of view, lie in changing from a private sector delivery to a public sector delivery system. Run properly, the premium cost for drivers under either system can be roughly the same.

While Ontario's benefits, taking into account both the no-fault and tort portions are, on the whole, fair, they are not being fairly delivered. The main cause is that the system does not promote a timely, conflict-free means of deciding what care is needed and providing it to accident victims. The system allows participants to work at cross purposes to its original goals:

- Insurers do not aim to provide care to their customers rather they focus on controlling costs.
- Accident victims may seek to maximize their entitlement rather than address their need.
- Lawyers working on contingency fees work to boost the value of claims.
- Providers are paid on volume of treatments, not results.

The system has strayed far from its goals. Justice Cunningham in his review of the Ontario dispute resolution system put it this way: "the whole notion of getting benefits to deserving claimants quickly and inexpensively has been lost."[1]

Broadly speaking, this report outlines a five-part action plan.

First, the government should fix the structural flaw in the system by setting up an arms-length regulator with a skills-based board. Thankfully this is already underway through the creation of the new Financial Services Regulatory Authority in Ontario. The legislation should set broad policy goals for auto insurance in the province and give the regulator powers to enact policies and procedures. The regulator must substantially overhaul existing Regulations to make them simpler to understand and easier to apply. The regulator will need to be very much more involved and proactive in the functioning of the auto insurance marketplace than it is today.

Second, the system of compensation for catastrophically injured persons needs to be substantially changed. Cash settlements are being drained by having to pay legal fees and, in any case, cash settlements often do not adequately meet the needs of catastrophically injured persons. They need lifetime care as their needs and available treatments will change over time. This must be actively explored with the Ministry of Health and Long-Term Care.

Third, the system needs to adopt a care not cash approach. The solution lies in focusing on timely, appropriate medical care, not cash settlements. All the other expenses such as wage replacement, attendant care, pain, and suffering build from the basis of the extent of recovery from an accident. The regulator must create programs of care – evidence-based treatment protocols, used extensively in several Canadian judrisdictions– that cover most common injuries. The programs of care need to be kept up to date and new ones introduced where necessary. Investment needs to be made on research into the diagnosis and treatment of mental stress and other neurological injuries.

This serves to avoid disputes as to what care is appropriate and delivers care to the majority of injured parties immediately. Where the programs of care don't apply, or don't work, a roster of hospital-based independent examination centres should be established by the regulator to provide diagnoses and future treatment plans. Insurers must provide the treatments prescribed in the programs of care or those that are stipulated by the independent examination centre without dispute. The advice given by the independent examination centres should be taken as mandatory in accident benefits and tort disputes and courts should afford these opinions a zone of deference in tort cases.

Where the legislation provides for care, care should be provided and not cash. This shifts the focus to the needs of the patient rather than the amount of the settlement.

Fourth, contingency fees for lawyers should be made much more transparent. The need for accident victims to hire lawyers to access benefits needs to be greatly reduced by simplifying the benefits and making them more readily available. And lawyers need to be held accountable for much more transparency in how they advertise and how they charge their fees.

Fifth, the auto insurance industry is likely to undergo major changes over the next ten years as innovation and competition from non-traditional sources come into the picture. The current regime of heavy regulation and price controls is poorly suited to adapt to the future. More open systems should be explored including changes to allow insurers to introduce new consumer products and to compete more freely on price and service in the marketplace.

There are several other supporting and useful recommendations that, for example, address more efficiency in the dispute resolution system; suggestions to improve the fairness of the tort system; ways to provide better education to consumers and improve innovation in the marketplace.

Ontario must strive to close the opportunity gap and achieve a premium rate for insurance that is close to if not at the Canadian average of about $900 a year. Ontario must also close the value gap in its service and obligations to accident victims. There is absolutely no reason this cannot be achieved.

No one government bears the responsibility for the current state of automobile insurance in Ontario. Successive governments from all political parties over the past 30 years have tried to improve the cost and value that auto insurance delivers to the citizens of Ontario. No-fault benefits have been increased and decreased, access to tort has been increased and decreased, private vs. public delivery has been analyzed, cost control measures have been tried, anti-fraud measures have been introduced and freezing of insurance premiums has been tried. None of these measures has succeeded in improving service or reducing costs for a sustained period.

There is no magic bullet. To achieve lasting value for its citizens, the government must push beyond the old methods of tinkering with aspects of the system and make some of the structural changes to the delivery system as recommended in this report.

There is no need to make any reductions in benefits; indeed, catastrophically injured accident victims can be better served. There should be new investments in health care particularly for brain and mental injuries, such as chronic pain. Access to early, appropriate, health care should be made readily available. Accident victims will recover faster and fewer will develop permanent impairments from their injuries.

Disputes will be significantly reduced. Billions of dollars currently being spent on disputes can be diverted and made available to provide benefits for accident victims and those who pay premiums. The focus of the system will change from managing costs to helping injured paries recover and return to their former functioning lives. Insurers can compete on service and price. There will be robust and independent regulatory oversight.

None of the measures proposed in this report is revolutionary. There is no need to make a disruptive change from a private to a public system of delivery. The government has already put in place legislation to create an independent regulator and evidence-based programs of care are already being used to benefit thousands of injured persons in other jurisdictions across Canada. In Ontario, hospital-based teams are already engaged in providing independent opinions of future care where needed, and catastrophically injured persons are already receiving lifetime care rather than cash settlements in some auto insurance jurisdictions in Canada and in all of the provincial worker compensation systems.

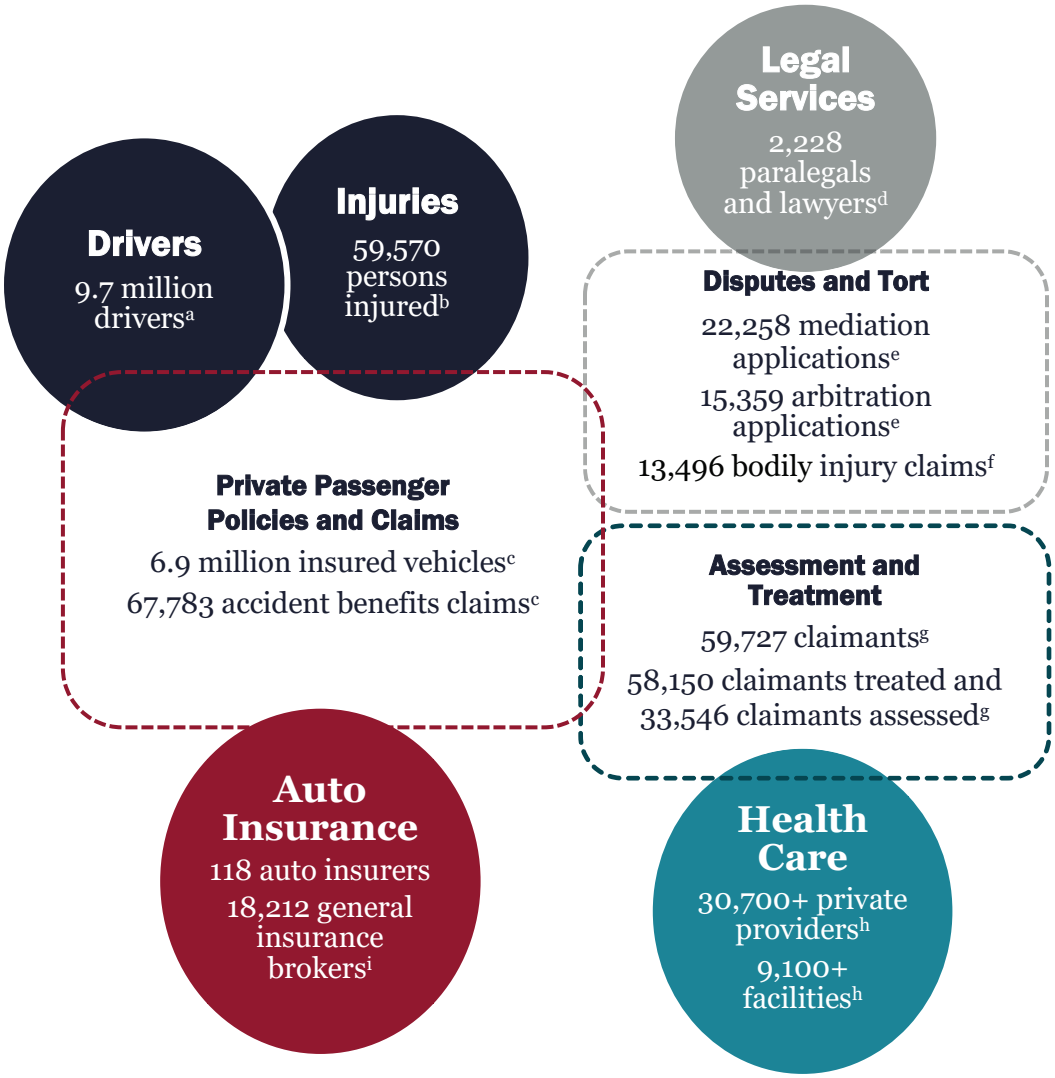
The biggest challenges will be in implementation. The independent regulator will be a new function and will have to evolve into its mature role in regulating the auto insurance industry in ways that help it deliver good value. Insurance companies will have to change from managing cash to managing care. There are plenty of examples of how this is being done today from which they can learn. Structural change does take time to deliver results. In the case of automobile insurance, the results are likely to be felt in eighteen months to two years from when action is taken. This is likely sooner than one would expect from such a transformational change in such a large system, but not as soon as some might like, namely an immediate reduction in costs.

The rewards are great for all parties concerned; and best of all they are sustainable. Ontario has an opportunity to lead the way in auto insurance.

Auto Insurance in Ontario

BACKGROUND/CONTEXT

Figure 1: Major Participants and Interactions in the Ontario Auto Insurance System – 2013[2]



The law obliges citizens who own automobiles to carry a certain level of insurance to protect against injury to themselves and others who may be injured as a result of an auto accident. It also requires a certain amount of insurance to be carried

to help with the cost of repairs to the automobile if the driver is not at fault.
The benefits that are available to consumers to help them recover from an accident are sometimes referred to as the accident benefits, ABs or no-fault benefits.

Table 1: Auto Insurance Coverage in Ontario

Mandatory Coverage	Optional Coverage
Accident Benefits Provides benefits if an insured individual is injured in an accident, regardless of who caused the accident ("no-fault" benefits)	Optional Accident Benefits Can include greater limits for standard accident benefits coverages or new coverages such as indexation of benefits
Third-Party Liability Pays for claims as a result of lawsuits, minimum coverage by law is $200,000	Collision Pays for losses when an insured vehicle is involved in a collision with another object, including another vehicle
Direct Compensation Covers damage to an insured vehicle to the extent that the insured driver was not at fault for the accident	Comprehensive Pays for losses from a number of different perils, including theft, vandalism, fire or hail
Uninsured Automobile Coverage Protects drivers from damage caused by an uninsured motorist	Other Optional Coverages Such as coverage for the cost of a rental vehicle while an insured vehicle is being repaired

Source: Ministry of Finance

If the driver of an automobile is not at fault, the law permits him or her to recover additional damages, after meeting certain thresholds, from the at-fault driver through the courts under tort law. This is referred to as the bodily injury (or BI) or tort portion of the system. Ontario drivers are obliged to carry insurance to deal with this "third-party liability." Optional coverage is available to drivers over and above the mandatory coverages.

Table 2: Tort Claims

1. Verbal Threshold	2. Tort Deductible
▪ The verbal threshold is permanent serious disfigurement or permanent serious impairment of an important physical, mental or psychological function ▪ Only accident victims that meet the verbal threshold can receive tort compensation for pain and suffering and excess health care expenses	▪ Court awards for pain and suffering of less than $124,616.21 are also subject to a deductible of $37,385.17 (amounts linked to annual inflation) ▪ A lower deductible and lower threshold apply for claims under the *Family Law Act*

Source: Ministry of Finance

Automobile insurance in Ontario is not taxpayer funded. Owners of vehicles predominantly carry the cost of accidents and injuries through insurance premiums. In that sense, it is not a social welfare system. Nor is it a full tort system. Rather it occupies an intermediate zone between the two systems. The no-fault (accident benefits) part of the insurance system acts like a safety net collectively funded by the owners of motor vehicles, and the bodily injury part acts like a tort system where injured parties who are not at fault can sue the at-fault parties for additional compensation.

Because carrying automobile insurance is mandatory, the government has an obligation to create a marketplace where insurance is available and affordable. The government is also obliged to see that the system is fair and reasonably efficient in providing the intended benefits.

Governments across the country have had to decide how to balance the no-fault collective liability portion of the system with the right to sue at-fault drivers in the tort system.

The tort system is confrontational, time-consuming, involves the cost of legal counsel and experts, and ties up negotiating time if settled out of court or court time if cases go to trial. Moreover, using the court system to get injured parties what they deserve results in a significant leakage in the benefit they actually receive since the award they get is reduced by the need to pay expert witnesses and large fees to lawyers.

The no-fault portion of the system is intended by many governments to provide most, if not all, essential needs of injured parties through a system that is more efficient, less costly and delivers more of the end benefit to the consumer than the tort system. Where the no-fault portion of the system is outsourced to the private sector as in Ontario, the goals are challenging to meet. If not structured properly, this part of the system can start to mirror the tort system with its inevitable confrontation, costs and delays, which is what is happening in Ontario today.

It is important to remember that in the end, the citizen who owns a vehicle pays, through their insurance premiums, for the full cost of the combined no-fault and tort systems, whichever way the system is structured. There is no free lunch. It is also important to remember that not all injured persons have access to sue – only those who are not at fault. About 30 per cent of drivers who are involved in accidents are at fault which leaves this substantial proportion of injured persons out of the tort system and with access only to the basic no-fault coverage.

HISTORY OF AUTO INSURANCE REFORMS

Ever since mandatory auto insurance came into force in Ontario in 1980, successive governments have been continuously striving to balance the essential goals of the system: adequacy of benefits, cost, efficiency and fairness. It is not as though these issues have been ignored.

Before 1990, Ontario auto insurance operated with minimal accident benefits on the no-fault side and largely as a tort system. Lawyers represented the majority of accident victims.

However, costs rose rapidly, and the government tried to put a lid on costs by freezing insurance premiums. In 1986 the government appointed Justice Coulter Osborne to look into the matter. In Justice Osborne's report, Report of Inquiry into Motor Vehicle Accident Compensation in Ontario (Osborne Report), he stated that rising costs due to the costs of litigation and court awards and restricted premium increases were the main cause of an insurance marketplace "crisis."

In 1990, the government shifted the balance of compensation needs from the tort system to the no-fault accident benefits system. Henceforth, to save time and money most of the requirements for compensation were to be met through the accident benefits system with restrictions on what could be obtained through the tort system. The government also introduced other recommendations of the Osborne Report namely a process of rate approvals and a system for dispute resolution outside of the courts.

Since then, a succession of governments in Ontario has grappled with the problem of the degree of protection from the effects of automobile accidents which citizens should maintain vs. affordability and efficiency.

In 1994, the then government considerably expanded the benefits under the accident benefits system, extended the right to sue under tort for pain and suffering, but eliminated the right to sue under tort for economic damages.

In 1996, the government reintroduced the right to sue for economic damages but reduced the amount of coverage for medical and rehabilitation benefits under the accident benefits system. The government also introduced additional cost control measures, such as setting maximum fee schedules for providers of health care and the requirement to submit treatment plans for approval by insurance companies. Initially, these fee schedules were based on a negotiated agreement between providers and the insurance industry. The same government introduced further refinements to these reforms in 2003.

Later, in 2003, a new government introduced legislation to temporarily freeze auto insurance rates and set an objective to reduce rates by 10 per cent.

In 2006, the government eliminated the Designated Assessment Centres (DAC) system and moved back to addressing accident benefits disputes through insurer examination assessors.

In 2010, the government introduced further substantial changes, changing benefits under the standard accident benefits coverage and presenting a series of reforms to try to control costs, exploring the use of evidence-based treatment plans, capping the cost of medical assessments, capping the maximum benefit for a minor injury and other measures. Later the government introduced many of the recommendations of the Ontario Auto Insurance Anti-Fraud Task Force.

In June 2013, the government passed the Prosperous and Fair Ontario Act, which set out a target to reduce insurance premiums by 15 per cent over the next two years.

Finally, in 2015, the government introduced legislation impacting no-fault benefits, and in April 2016 a new dispute resolution system was introduced based on recommendations in Cunningham's Final Report.

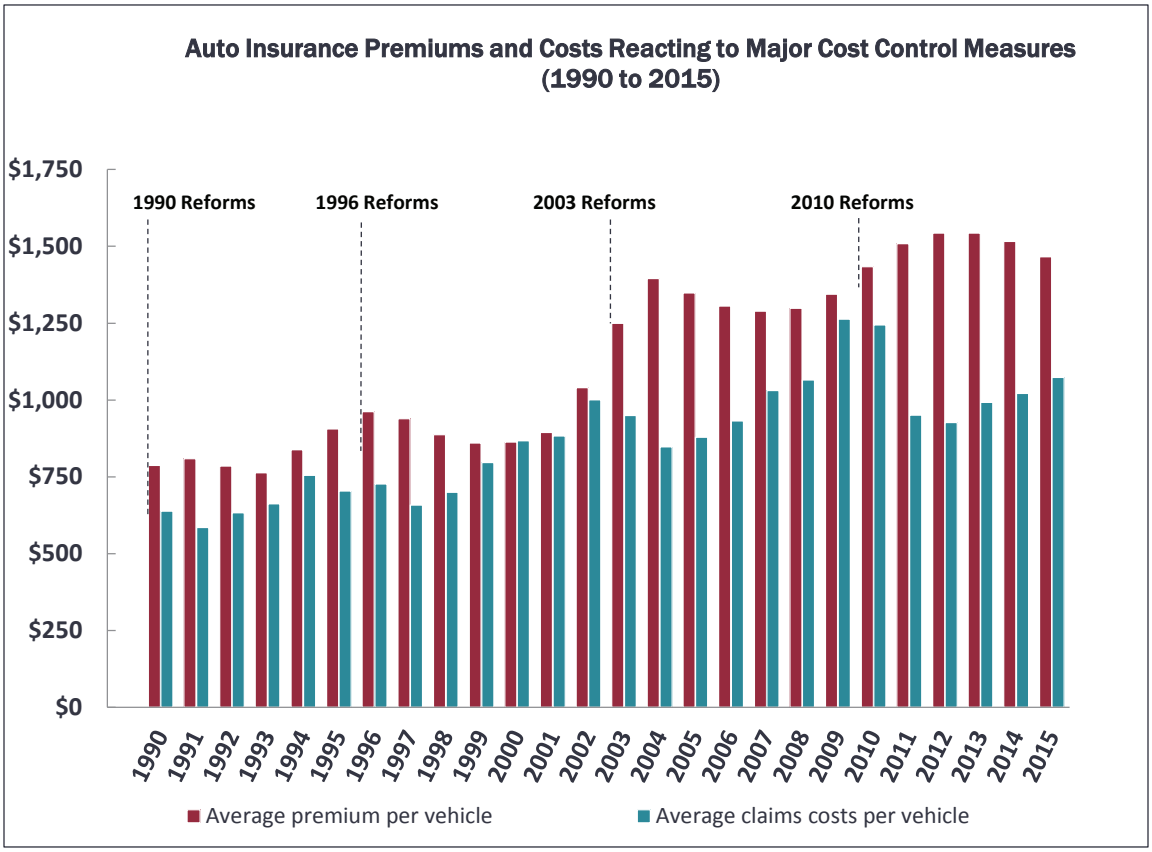
The government is presently engaged in implementing the recommendations in the report of an expert advisory panel that undertook a review of the mandates of the Financial Services Commission of Ontario, the Financial Services Tribunal and the Deposit Insurance Corporation of Ontario (FSCO Mandate Review). If adopted, these changes have the potential to substantially improve the regulatory oversight of financial services in Ontario, giving the regulator more powers to enact policies and respond to the needs of the financial services marketplace.

What this long list of interventions and initiatives by successive Ontario governments from all three political parties shows is that there has been no lack of effort to try to improve the system of auto insurance. No-fault benefits have been increased and decreased, access to tort has been increased and decreased, cost control measures have been tried, anti-fraud measures have been introduced, freezing of insurance premiums has been tried and now a complete restructuring of the regulatory body is underway.

There has been no lack of trying to improve the system.

Chart 1 shows that following each of the reform measures over the past years, costs and premiums come down for a few years and then begin to rise sharply to establish new highs. This has been a challenge for governments for a long time.

Chart 1: Auto Insurance Premiums and Costs Reacting to Major Cost Control Measures

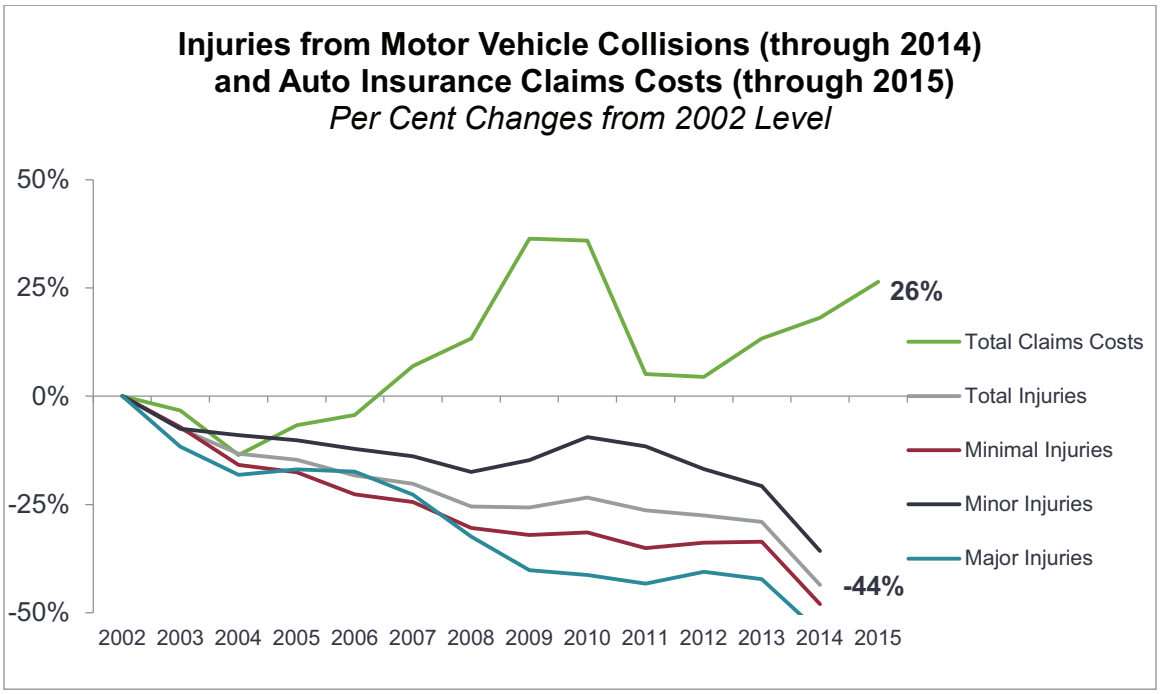


Source: General Insurance Statistical Agency exhibits for private passenger vehicles

Further changes in benefits were implemented in 2015 to curb costs, but trends indicate that costs will once again rise despite these changes.

What is even more disappointing is that while the number automobile accidents – especially very serious ones – have consistently come down, the cost of claims has consistently gone up (see Chart 2).

Chart 2: Collision Injuries vs. Costs



Source: General Insurance Statistical Agency exhibits for private passenger vehicles and Ontario Road Safety Annual Reports (ORSAR), Ministry of Transportation

The long, winding road we have taken over 50 years to tinker with and adjust the system of auto insurance has fallen short in one crucial respect – there has been scant innovation in the system. Aside from a few new features, such as premiums based on driving behaviour (usage-based insurance) which are not widely available or purchased, the system is still delivering the same product in the same way it has for over half a century. Part of the responsibility must lie with how the industry has been structured

and regulated. Everywhere around us industries that have failed to change are being disrupted. There is clearly a need to structure the system so that it can be encouraged to innovate and change.

Where We Are Now – The Opportunity Gap and The Value Gap

THE SYSTEM IS EXPENSIVE

Ontario today remains in an unenviable position. Ontario's roads continue to be among the safest in North America. In 2013, Ontario's fatality rate of 0.54 per 10,000 licensed drivers was the second lowest ever recorded. It was the second lowest in all of North America, behind only the District of Columbia. In 2013, Ontario's injury rate of 62.1 per 10,000 licensed drivers is the lowest injury rate ever recorded and among the lowest in Canada.[3]

Expenditure not going directly to the benefit of claimants ... is threatening the very foundation of the system.

Nonetheless, in 2015, at an average premium per vehicle of $1,458, Ontario's is the highest in Canada. Auto insurance premiums represent a significant expenditure for the average Ontarian. That premium is 24 per cent higher than Alberta's at $1,179, a province with a similar distribution structure, double the premium of Quebec at $724 and more than 55% per cent higher than the Canadian average, excluding Ontario, of about $930 (see Table 3 below). Collectively, Ontario drivers pay about $10 billion a year in automobile insurance.

To put it another way, if Ontario's auto premiums per vehicle could approach the Canadian average premium, it would represent a premium reduction of almost 40 per cent over the current level, or nearly $4 billion a year, to Ontario's consumers. That's a lot of money. **This represents the opportunity gap we must try to close.**

IS IT DELIVERING VALUE?

Ontario also has other serious challenges. First, the amount of leakage of funds in the system – expenditure not going directly to the benefit of claimants at about $1.4 billion a year (see Table 6 below) is extraordinarily high. Second, in the course of my discussions, insurers shared with me that it is taking them over a year to close even the simplest claims on a full and final basis. Third, accident victims are having a difficult time getting what they perceive to be fair benefits. One out of three accident benefits claims goes into a dispute resolution system (see Figure 1, Disputes and Tort and Appendix VI).

And finally, despite expending large amounts on health care, a very high percentage – some 25 per cent of claims – present themselves as having developed serious and permanent impairments from what began as mostly simple soft tissue injuries.[4] **These challenges represent a value gap we must try to close.**

THE STRUCTURAL PROBLEM

The system of regulation and delivery of auto insurance in Ontario is poorly structured.

It induces participants to act against each other rather than to ensure a common goal. Over time, governments have enacted legislation and increasingly complex and detailed regulations in attempts to solve this problem. Private sector insurance companies sell and implement this program on a cost recovery plus profit margin basis.

This hybrid structure; a government-mandated service delivered by private industry, brings with it inherent challenges that have not been well understood and have contributed to undermining the intent of the government.

Insurance companies work best when they write policies with well-defined parameters and outcomes, which allows them to estimate risk and set the premiums accordingly. We see this in typical supplementary medical coverage benefit plans or short-term and long-term disability plans. The conditions under which benefits will be available are well defined and the amount of the benefit is defined. For example, the coverages for drugs and dental care are described as being eligible for payment as long as they represent usual and habitual costs and they invariably have a maximum per person and per year or a lifetime maximum. Both parties, the insurer and the insured, understand the contract. Very few disputes arise, benefits are paid promptly and they are rarely taken to court for a decision.

AUTO INSURANCE AS A GUARANTEED SAFETY NET FOR ACCIDENT VICTIMS

Programs like auto insurance, which have overarching goals and apply to a broad segment of society (such as worker's compensation, social assistance and others) are usually given to government agencies to administer. These agencies are given the powers and authority of an administrative tribunal. Basically, the agency is given the authority to enact policies and procedures that interpret the governing legislation and further refine their application.

Quebec, for example, has elected to provide no-fault auto insurance through an empowered government agency. This is not the case in Ontario. The government has designed a guaranteed safety net and then assigned it to private sector agents (about 100 insurance companies) to deliver without giving those agents the ability to decide how to deliver the program.

To complicate matters greatly, the current automobile insurance regulations are vague and broad in many important ways and at the same time extremely detailed and restrictive.

For example, in dealing with an injured person's entitlement to rehabilitation benefits, the Statutory Accident Benefits Schedule (SABS) enumerates a list of benefits and then concludes with:

"Rehabilitation benefits shall pay for necessary expenses ... for the purpose of reducing or eliminating the effects of any disability resulting from the impairment, or to facilitate the person's reintegration into his or her family, the rest of society and the labour market."[5]

The interpretation of this provision is wide open to dispute and disagreement. Since there is no person or agency empowered to make rules or regulations other than the Cabinet itself, the eligibility of any particular form of benefit for a given claimant is left to be contested as between claimants and their lawyers; and insurers and their lawyers either before mediators, arbitrators or before the courts.

At the same time regulations attached to the Insurance Act are extremely detailed and restrictive; insurers must follow 50 pages of prescribed forms and actions (the much-contested SABS) in virtually every interaction with their clients and providers of services. These regulations are designed to provide protections to consumers and also consistency of service across multiple insurers. These are laudable goals but there is no doubt that they also restrict innovation, efficiency and competition since every insurer must do the same things in the same way.

To access benefits a person must first fill out an eight-page form that can be difficult to understand, even though they may have already registered their claim with the insurance company by telephone. In all cases where the injury is more than "minor," a service provider must ensure the insurer approves the treatment plan to confirm that the treatment will be paid. An insurer is restricted from having a sensible discussion about the treatment. Instead, the only option is to accept the treatment plan or reject it. Plans are often rejected, but generally only after obtaining an expensive "independent" medical exam (also called an insurer examination). The injured person's only recourse, if the plan is rejected, is to seek help, usually from a lawyer, and likely to generate expensive, opposing medical exams, the cost of which get deducted from the maximum benefit available.

A large number of accident victims have some alternative health or income replacement insurance through their workplaces. The SABS stipulates that the auto insurer is the "second payer." In these cases, the auto insurance company will not pay the health care provider until after they have recovered any eligible amounts from the claimants' workplace or other insurer. Claimants are often surprised and annoyed to learn that they must first exhaust their workplace medical and sick day insurance before they can benefit from their auto insurance.

The goals of all the principal stakeholders are not well aligned. As a result, the government's goal ... is being undermined.

Insurance companies are not required to, and therefore many do not see their role as providing health care for their clients. They treat every claim as a cash expense and act to minimize their cash outlays. Insurance company front line staff are not "case managers," they are "adjusters." As a consequence, they are often viewed by their clients not as someone there to help them recover from their injury but as someone having a conflict of interest – since they might try to limit the amount of benefits. In my consultations with insurance companies it became clear that they are not happy with this role. They recognize that their policyholders are their clients, and they wish to provide good service. However, they feel hamstrung by the legislative and regulatory framework within which they have to work. Unfortunately, despite restrictive regulations, insurance companies could do more for their clients in the area of helping them manage health care. But the roles and positions taken up by claimants, their legal representatives and the government are such that insurance companies have found it comfortable to remain in their expected role of managing the cost of claims rather than the care. This is the outcome of decades of "expectations." All of the participants in the system have come to accept the status quo and have learned to live with it.

Most injured parties seek to receive the help they need and move on with their lives. However, a small but significant number have a propensity to maximize their entitlements rather than address their needs. They approach the insurance company with expectations that their injuries are serious and expect to encounter a reluctant payer – and in many instances their expectations are fulfilled. On the other hand, insurance companies often suspect that claimants may be exaggerating their needs in order to get a larger settlement. At present, there is no efficient, professional and unbiased way to diagnose the true needs of an injured person and to provide appropriate treatment.

Personal injury lawyers, representing clients on a contingency-fee basis, have a financial stake in the outcome and are incented to maximize the presentation of their client's disability. They enlist the services of multiple medical experts in this effort who also have to be paid for their services.

Health care providers (of which there are myriad) are incented to over-treat the client as they are being paid for treatments rather than the outcomes.

In Ontario, there are more than 30,000 providers belonging to 26 different professional bodies to treat some 60,000 injured claimants a year (see Figure 1 above).

The goals of all the principal stakeholders are not well aligned. As a result, the government's goal, to provide affordable and efficient care for those injured in automobile accidents, is being undermined by the way the structure of the system is exploited. This puts the government on the defensive when the system exhibits dysfunctional symptoms.

The Results

CROSS-JURISDICTIONAL COMPARISONS

Cross-jurisdictional cost comparisons are difficult to make because the level of benefits in the no-fault system and access to tort vary. Simply put, a province may provide fewer no-fault benefits but allow more access for plaintiffs to sue at-fault drivers for additional benefits. The "no-fault" insurance premium may be low but the premium to defend policyholders against claims in the event they are at fault will be higher. The resulting overall auto insurance premium thus reflects the total cost of the two benefit access systems combined. There is no free lunch.

In terms of benefits provided, Ontario has a higher level of no-fault benefits compared to Alberta and Nova Scotia, which have a similar private sector delivery structure, as well as B.C., which has a predominantly government-run, no-fault system. But Ontario has more restrictions on what can be obtained through the tort system than these other provinces. On the other hand, Quebec and Manitoba, which deliver their health care and rehabilitation program through a government agency, have much more generous benefits in their no-fault systems than Ontario. In Quebec and Manitoba, there are no limits to medical care either in dollar value or time frame, catastrophically injured persons get all the medical care they need for as long as they live and generous wage replacement till age 65. Saskatchewan's government-run, no-fault system has a maximum lifetime benefit of $6.7 million. But, in these cases, there is no access to the courts for tort recovery.

One could make a general assumption that the combined access systems provide fair benefits overall – generous no-fault benefits are accompanied with restrictions to access in tort and vice versa. There is, however, one major exception and that is that the tort system excludes at-fault drivers (about 30 per cent of injured parties.) who cannot sue under tort. Hence it is likely true to say that the more generous no-fault systems treat all accident victims more fairly than those that require access to tort. As well, when benefits are obtained through the tort system, accident victims lose a significant portion of their benefits because they have to pay lawyers and other experts to prosecute their case.

TOTAL PREMIUMS

The combined premium costs of the two benefit access systems no-fault and tort for provinces across Canada for 2015 are shown in Table 3. We can see from this table that Ontario has the highest average premium costs across all provinces. The average premium amongst the provinces and territories excluding Ontario is approximately $930 vs. Ontario's at $1,458. Table 3 compares overall provincial auto insurance premiums. The provinces which have a private sector delivery system similar to Ontario's (Alberta and the Atlantic provinces) are shown in blue. The average premium of this group of provinces for 2015 is $914 and Ontario's premium at $1458.

With the exception of Ontario, the average premium level of provinces with private delivery systems ($914) is lower than the average premium of provinces with government-run delivery systems ($937), indicating that the method of delivery – government vs. private sector – is not necessarily a major determinant of cost.

Table 3: Auto Premiums 2015

Calculation method	Province	Avg. Written Premium
Per vehicle – private passenger vehicles (PPV) (1)	Ontario	1,458
Per vehicle – PPV (1)	New Brunswick	763
Per vehicle – PPV (1)	Newfoundland and Labrador	1,090
Per vehicle – PPV (1)	Nova Scotia	783
Per vehicle – PPV (1)	Prince Edward Island	755
Per vehicle – PPV (1)	Alberta	1,179
Per vehicle – PPV (1)	Northwest Territories	974
Per vehicle – PPV (1)	Yukon	806
Per vehicle – PPV (1)	Nunavut	968
Per vehicle – PPV (5)	British Columbia (ICBC +private)	1,316
Per vehicle – PPV (4)	Quebec (public+private)	724
Per vehicle – all vehicles (2)	Saskatchewan Auto Fund only	775
Per vehicle – PPV (3)	Manitoba Public Insurance only	1,001

Source: Based on (1) General Insurance Statistical Agency, (2) Saskatchewan Government Insurance Annual Report, (3) Manitoba Public Insurance 2017 Rate Application, (4) Société de l'assurance automobile du Québec, (5) Written premium data from Insurance Corporation of British Columbia and MSA Research Inc.

Claims are per accident year in Ontario, Alberta, the Atlantic provinces, N.W.T., Yukon and Nunavut

PREMIUM MIX ACCIDENT BENEFITS VS. THIRD PARTY LIABILITY

The relative emphasis as between no-fault and tort premiums for those provinces with a private sector distribution system similar to Ontario's is shown in Table 4. What this shows is that Ontario's higher accident benefits system is reflected in significantly higher premium costs for no-fault coverage among provinces with a similar private sector distribution system. To recognize a more generous accident benefits system Ontario has the highest barriers for access to tort. However, despite this, Ontario still has by far the highest third party liability premium among provinces with a similar distribution system. Ontario is more expensive on both the no-fault and tort side of the equation which signals that there is something wrong with the way the system is being managed.

PUBLIC VS. PRIVATE DISTRIBUTION SYSTEMS

Alberta, Ontario and the Atlantic Provinces have a private sector distribution system for auto insurance while Quebec and all the western provinces except Alberta, have predominantly government-run systems for auto insurance. Table 3 shows that both systems achieve premiums that are well below Ontario's. There are provinces with privately-run auto insurance systems that achieve a lower premium than some with government-run systems and vice versa.

Ontario's auto insurance premium is too high by a wide margin, whether it is compared to provinces with government-run or privately-run auto insurance systems. The system of distribution, whether public or private and the mix as between more or less generous no-fault systems with more or less access to tort do not seem to impact overall premium costs as much as how the systems are managed. Ontario can do well by taking the best from the other systems and improving its own.

Table 4: Average Premium Cost per Passenger Vehicle, Select Provinces

Average Premium Cost Per Private Passenger-Vehicle ($) by Major Coverage Ontario and Other Provinces with Privately-Delivered Auto Insurance Accident Years 2011 to 2015						
	Ontario	Alberta	New Brunswick	Nova Scotia	Newfoundland and Labrador	Prince Edward Island
Total*						
2011	$1,509	$1,073	$817	$801	$1,006	$760
2012	$1,543	$1,078	$804	$786	$1,014	$744
2013	$1,544	$1,100	$785	$775	$1,032	$747
2014	$1,516	$1,134	$771	$775	$1,054	$756
2015	$1,466	$1,165	$759	$775	$1,075	$756
2011-2015	$1,515	$1,112	$787	$782	$1,037	$753
Third Party Liability						
2011	$651	$508	$401	$396	$634	$359
2012	$678	$504	$392	$378	$629	$352
2013	$693	$517	$386	$369	$631	$348
2014	$707	$539	$379	$386	$633	$347
2015	$716	$566	$373	$386	$634	$347
2011-2015	$690	$528	$386	$383	$632	$351
Accident Benefits						
2011	$541	$52	$126	$73	$73	$61
2012	$558	$52	$117	$66	$73	$60
2013	$544	$54	$108	$63	$74	$59
2014	$500	$55	$100	$65	$73	$58
2015	$439	$57	$91	$65	$71	$55
2011-2015	$516	$54	$108	$66	$73	$58

Source: 2013-2015 General Insurance Statistical Agency exhibits for private passenger vehicles.

** May include coverages not listed separately.*

Note: There are slight, but not significant differences between the 2015 premiums in this table vs. Table 3 above due to different sources of data.

Table 4 shows the relative emphasis placed by different provinces on the no-fault and tort systems as a means of compensating auto injuries. Overall, Ontario's system is the most expensive.

CLAIMS APPEAR TO BE UNUSUALLY EXPENSIVE, ARE TAKING TOO LONG TO RESOLVE, AND TOO MANY ACCIDENT VICTIMS ARE SUFFERING A PERMANENT SERIOUS IMPAIRMENT FROM WHAT BEGAN AS SOFT TISSUE INJURIES

Table 5 shows that average overall claims costs (no-fault and tort combined) for those provinces with similar, private delivery systems. Ontario's average claim costs at about $11,600 is double that of most of the other provinces with similar delivery systems.

Table 5: Avg Premiums and Avg Claims Costs 2015

Calculation method	Province	Avg. Written Premium	Avg. Claim Cost (incl adj. exp.)
per vehicle – private passenger vehicles (PPV)	Ontario	1,458	11,556
per vehicle – PPV	New Brunswick	763	5,712
per vehicle – PPV	Newfoundland and Labrador	1,090	6,235
per vehicle – PPV	Nova Scotia	783	5,491
per vehicle – PPV	Prince Edward Island	755	4,306
per vehicle – PPV	Alberta	1,179	9,150

Source: General Insurance Statistical Agency

Claims are per accident year in Ontario, Alberta and the Atlantic Provinces

Medical care drives all the other costs in the system. The longer an injury takes to resolve, the more likely it is to become chronic, the more medical care is needed and all the other costs – replacement of lost wages, attendant care, compensation for pain and suffering also go up. Worst of all, the injured person is not well served by extending their disability.

The majority of injury claimants report that they have "minimal" or "minor" injuries at time of the accident. While symptoms may manifest themselves long after an accident, the fact is that most people are not seriously injured. Some 83 per cent of motor vehicle injuries involve whiplash or other soft tissue injuries such as a sprained back, which, most of the time, can be treated by relatively simple, short-term and inexpensive procedures that are well understood by health care providers.[6]

The system is open to inefficiency, excessive cost and over treatment.

In the course of my inquiries, insurers indicated to me that on average, claims that fall under the minor injury definition – mostly soft tissue sprains and strains – take just over one year to close if they are not disputed and incur an average medical cost of $2,000 to $3,000. If the claims are disputed the average time to resolve minor injuries increases to roughly 900 days and involves medical costs averaging $10,000 to $15,000. These costs, not covered by OHIP, which are for generally minor soft tissue injuries, would indicate that either there is a fairly intensive set of treatments taking place or providers are being overpaid.

Individual insurance companies do not keep track of when claimants reach medical recovery, nor does the regulator. Records are only kept on how long it takes to close a claim file. There is no record kept of outcomes or the effectiveness of medical treatments. In the absence of understanding how effectively medical care is being delivered, the system is open to inefficiency, excessive cost and over treatment. Moreover, there is no opportunity to improve outcomes for patients. Considering that support for medical recovery is one of the cornerstones of the legislation, the system is not currently meeting this standard.

The longer a claim takes to settle the longer the claimant must continue to fight with the insurance company and to assert that they continue to suffer consequences of the accident or might suffer such consequences sometime in the future.

Dr. Côté, in his study on the outcome of insurance claims for whiplash injury, points out that "there was a strong and consistent association between the time to the closure of claims and recovery from the injury. A lower level of pain and a higher level of physical functioning and the absence of depression were strongly associated with shorter time to closure under both tort and no-fault systems."[7]

The Association of Worker's Compensation Benefit Systems in Canada reports on its web site that the average duration of injury claims for 2015 (the length of time taken to get a worker back to health and to close the file) is just 76 days, about two and a half months.[8] This compares with the one year to two years or more it takes to resolve minor injury claims in the auto insurance system.

The Ontario auto insurance system could achieve better health care outcomes for accident victims and save considerable money by creating programs of care and aligning the payment schedule to those of other payers.

The study Initial Patterns of Clinical Care and Recovery from Whiplash Injuries: A Population-Based Cohort Study put it this way:

"We found that increasing the intensity of care beyond two visits to (family doctors), beyond six visits to chiropractors, or adding chiropractic to medical care was associated with slower recovery from whiplash injuries even after controlling for initial injury severity. Clinicians who promote frequent visits may inadvertently encourage patients to cope passively with their pain…patients who cope passively with their pain may demand more clinical care. Relying on repetitive clinical care likely reinforces some patients' belief that whiplash is a serious disorder with a long, disabling course. As with low-back pain aggressively treating patients with acute whiplash injuries likely promotes illness behaviours and disability rather than return to normal activities."[9]

Other studies have pointed to long recovery times and over-treatment of injured persons. The Automobile Insurance Third Party Liability Bodily Injury Closed Claim Study in Ontario conducted by Pinnacle Actuarial Resources, Inc (Pinnacle Study) found that soft tissue injuries (neck and back sprains) were associated with claimants who accounted for 67 per cent of the total claim payments in the study.[10] The study also reported that roughly 70 per cent of the claimants were classified as having no injuries or having minimial or minor injuries in the police report. Nonetheless, the majority of these claimants developed serious and permanent impairmants and the median time lost from work for these claimants was seven months.

Each year an average of about 25 per cent of injured persons make bodily injury tort claims.[11] In order to make a bodily injury claim, the individuals must produce medical evidence that they have suffered a permanent serious impairment of an important physical, mental or psychological function (necessary to pass the verbal threshold). This is a very high level of impairment from what are mostly soft tissue injuries. The provincial worker's compensation systems in Canada find that the proportion of claims awarded permanent impairment benefits across Canada is about 13.5 per cent or almost half that found in the auto insurance system in Ontario.[12]

Soft tissue injuries should not normally develop into permanent impairments if they are treated properly to begin with. The rate of impairment in the auto insurance system is a warning sign that medical care is not being properly handled. Appropriate medical treatment has been shown to reduce or prevent the development of permanent impairments from soft tissue injuries by as much as 80 per cent.[13]

THERE ARE TOO MANY CLAIMS GOING INTO DISPUTE – EVEN MEDIATION ATTEMPTS FAIL AT LEAST 40 PER CENT OF THE TIME

Each year approximately 23,000 or about 30 per cent of all accident benefits claims – go into the dispute resolution system (see Figure 1 above). This level of breakage is a signal that there is something seriously wrong with how claims are being handled. In Ontario's auto insurance system, claims that go into dispute are represented by legal counsel nearly all the time. Over the five-year period 2011-2015, an average of 9,000 claims (40 per cent) that went into dispute resolution failed to reach full and final agreement at the mediation stage and went on to an arbitration process, adding further time and cost to the system (see Appendix VI).

ACCIDENT VICTIMS ARE SUFFERING LARGE LOSSES

In order to understand where the costs and benefits in the auto insurance system are going, I undertook an examination for the 2013 fiscal year. What I found is that there is tremendous leakage of costs in the system. Out of the $3.87 billion in costs for 2013 (combined accident benefits and bodily injury), only $2.5 billion is going to claimants. The rest, approximately $1.4 billion, is going to other parties. Over five years this amounts to almost $7 billion going to other parties – a staggering sum which is threatening the very foundation of the system.

Table 6: Cost Leakage Analysis ($ Billions) 2013 Accident Year

	Accident Benefits	Bodily Injury
1. Total claim costs excluding overheads	2.170	1.700
2. Direct cost to Insurers (legal fees + expenses) to defend claims in dispute or tort	0.272	0.213
3. Amount attributable to claim payments for claimants (1-2)	**1.899**	**1.487**
4. Cost of insurer initiated medical exams	0.278	0.000
5. Total claim payments (available) for claimants (3-4)	**1.621**	**1.487**
6. Cost of provider initiated medical exams	0.065	0.000
7. Contingency fees	0.096	0.373
8. Disbursements for medical and other experts	0.000	0.057
9. Net received by claimants (5-6-7-8)	1.460	1.058
10. Benefit administration loss (3-9)	**0.439**	**0.430**
11. Percentage leakage from claimants (10/5)	27%	29%
12. Total cost leakage to the system (2+4+6+7+8)	0.711	0.642
Total leakage as a percentage of direct claim costs	33%	38%

Source: Analysis based on data from General Insurance Statistical Agency exhibits for private passenger vehicles, the Pinnacle Study, Ministry of Finance and insurers.

Based on 2013 expenses, in the no-fault accident benefits system, out of about $1.9 billion in benefit payments by insurance companies, about $440 million, more than one dollar out of every four is not received by the accident victim in benefits; that is, $340 million is going to pay for competing medical opinions because insurers and claimants – or their lawyers – disagree on what is appropriate medical care, and another $100 million is going to lawyers' contingency fees. And this is in a no-fault system which is intended to eliminate disputes over fault.

In the tort or bodily injury part of the system the diversion of costs is proportionally higher. Out of about $1.5 billion in benefit settlement payments made by insurance companies, $430 million or almost one dollar out of every three is not going to accident victims; that is, $373 million dollars is going to pay lawyers contingency fees to fight with insurance companies and a further $57 million is going to pay for more medical and other experts to support accident victims claims against the insurance companies.

When you add in the costs incurred by the insurance companies to manage and defend claims in the dispute resolution and the tort systems, a further cost of almost $500 million is added to the overall costs which contribute to higher premiums but do not reach the accident victim.

Overall, out of total claim costs of about $4 billion in benefits, about $1.4 billion or some 35 per cent of the benefits costs are not going to accident victims. In my opinion, this is undermining the integrity of the system.

Commenting on his review of the dispute resolution system, Justice Cunningham said "The whole notion of getting benefits to deserving claimants quickly and inexpensively had been lost."[14]

MEDICAL EXAMS AND ASSESSMENTS

In the no-fault system, despite the fact that the majority of injuries are relatively routine and common, a major element of delay and extra cost is caused by the inability of parties to agree on an appropriate diagnosis and treatment of the injury. As a result, many thousands of expensive medical examinations are ordered by insurers and claimants in an effort to resolve this matter. Claimants frequently have to attend more than one insurer examination. The average total cost of examinations for each of the 30,000 to 35,000 claimants is approximately $9,000 for the life of the claim.[15] The aggregate cost of these insurer medical exams is huge. In the no-fault accident benefits system, the table in Appendix III shows that they grew from $248 million in 2004 to $847 million in 2010; then in response to a cap on the cost per medical opinion and other changes, they came down to $282 million in 2012 and has grown again to $347 million in 2013. The equivalent average annual cost of medical opinions in the whole of the Ontario Workplace Safety and Insurance Board system was just $30 million in treating 170,000 injured workers.[16]

A major element of delay and extra cost is caused by the inability of parties to agree on an appropriate diagnosis and treatment of the injury.

These medical opinion expenses in the Ontario auto system which in 2013 amounted to over 20 per cent of money spent on actual medical treatment costs do not go to medical care for the individual. What is perhaps even worse is that the usefulness of the medical opinions is questionable. In his final report, Justice Cunningham puts it this way:

"Today's insurer examination (IE) reports appear to have little credibility with claimants and only service to trigger disputes. ... IE assessors are not accountable to FSCO, have no standard assessment protocols, report formats or timelines and are not insulated from outside influence."[17]

SYSTEM IS FOCUSED ON CASH NOT CARE

As indicated earlier, the main reason is that the system of regulation and delivery is poorly structured. The government has enacted overarching legislation and then enacted regulations which are extremely prescriptive and handed the system to private sector insurance companies to deliver. These insurers do not have the powers of the administrative tribunal to govern their actions. Until there is a direct intervention by government to alter the system, the result will continue to experience very high level of disputes that can only be dealt with through a battle of experts and the added cost of legal fees.

It has become a system that is largely focused on cash rather than care. ... The outcomes are not only more expensive but worse for injured parties.

From the insurer perspective, many argue that the current structure effectively blocks them from managing the health care and recovery for their clients. As a result, claimants are left on their own to navigate the health care system with the frequent help of lawyers who themselves are not medical professionals. Overall recovery from injury is not the primary goal of anyone in the system – nor is it being measured or managed. This leads to suboptimal care, lengthy recovery times, overtreatment and escalation of simple soft tissue injuries into permanent impairments.

Faced with the structure of the legislation, insurers view claims through the lens of what they cost to settle – not what is the best medical outcome for the patient. Some claimants approach the process from the point of view of the maximum benefit they can get from the system, usually this is expressed as the dollar value of a cash settlement from the insurance company. Some health care providers in part are interested in maximizing their fees and there are lawyers, likewise, who are incented to obtain the largest cash settlement they can get for their clients since their fees are entirely contingent on the size of the settlement.

How health care goes, so goes the rest of the system. If medical recovery takes an extended time, wage replacement costs go up, attendant care costs go up, pain and suffering awards go up and all the other costs that derive from the extent of the time it takes to recover and get back to normal function go up, including legal costs.

The system has been diverted from its original goal: a medical safety net with ancillary financial compensation as a bridge. Instead it has become a system that is largely focused on cash rather than care. Paradoxically, the outcomes are not only more expensive but worse for injured parties.

What is Needed – A Sound Regulatory Regime with Fair Benefits Fairly Delivered

Fair benefits must be taken as the starting point in restoring the system to its original intent, and they must be delivered fairly. If these two conditions do not exist, the system will always fail to meet expectations and incur unnecessary cost. Benefits in the current Ontario auto system are fair, the system does not always deliver fairness – such as in cases of catastrophic impairment where lifetime care is essential. But benefits are not being fairly delivered, too many claims for treatment are being rejected and these are going into dispute.

This is mainly because of the legal and regulatory structure which does not allow for proper assessment of accident victims' needs.

Ontario doesn't have to have a poor system of auto insurance. There are good and sound ways to improve the process. The key to improvement must begin with clear goals for the system.

Implementation of the goals must be practical, simple and efficient. The system must deliver the best for the most people in each tier of injury severity. It cannot attempt to deal with all exceptions. The no-fault system should:

- **Provide an adequate safety net for individuals injured in an auto accident**

  The majority of auto related injuries are relatively minor. The system should provide appropriate scope for medical treatment and care. The focus of the system should be on the serious or catastrophically injured, as those cases are often unique to each individual and cannot be addressed by common treatments, such as in the case of minor injuries. That is where the most need lies. To the extent possible the no-fault system should satisfy the needs of the majority of injured parties without the need to resort to an expensive tort system.

- **Benefits should be simply described and easily understood**

  There is general agreement among stakeholders that the current description and entitlement provisions are overly complex. Very few people outside those who are professionals in the system are able to understand them. This needs to change.

- **Benefits should be easy to access without the need for legal counsel**

  The insurance system should be able to quickly respond to the legitimate needs of accident victims. Not only is it clear that accident victims are worse off if medical care is difficult to obtain and extended over a long period, but it is also evident that insurers can limit costs by supporting appropriate care on a timely basis. Currently, the design of the system allows for, and actually encourages, far too many delays and disputes.

- **Premiums should be affordable**

  It goes without saying that Ontario drivers do not have unlimited resources. Since they are required to purchase insurance for automobile accidents, the government has a special responsibility to create a marketplace that is efficient and affordable. At the present time insurance premiums in Ontario need to be made more affordable.

- **The system should be able to adapt and innovate**

  No matter what changes are adopted today, they are going to be obsolete in the near future just because of the nature of the rapid change that is a constant of our time. Because the current system is so firmly tied to legislation and regulation only the Legislature or the Cabinet can make any meaningful adjustments to the system. The system is not able to adapt and improve in a rational way as circumstances change. Hence you have major upheavals every three to four years. Nor is the system able to encourage innovation in product design and delivery. In a world where rapid changes are occurring in both the financial and automotive worlds these are serious shortcomings. It needs to change.

A Better Future – Should Ontario Move to a Government-Run Auto Insurance System?

This is a question that has come up more than once over the years. On the surface, it would seem that provinces with government-run auto insurance systems like Quebec and most of the Western provinces are able to achieve satisfactory auto insurance benefit systems at a much lower cost than Ontario has been able to achieve with its privatized model. The choice of delivery model – public or private – is not a simple one, nor is it a silver bullet. For example, provinces with government-run systems like Quebec, Manitoba and Saskatchewan have chosen to greatly enhance their no-fault insurance benefits and effectively restrict access to tort. B.C. has gone somewhat the other way with a relatively skinny no-fault benefit scheme with maximum access to tort with its attendant burden on the justice system. There are provinces with privately-run auto insurance systems that are less expensive than those of provinces with government-run auto systems. The B.C. system which is predominantly government-run, as well as subsidized, is the second most expensive in Canada, second only to Ontario's.[18]

The key to achieving lower cost and better value does not lie simply in the type of delivery model that is used. The key is to ensure that appropriate management and regulatory tools must be used which are appropriate for the model chosen. **Whichever model is chosen there needs to be certainty and speed of decision-making, simple benefit structures, efficient access to benefits without the need for intervention by third parties; incentives that are client-centric rather than provider-centric and continuous measurement and improvement processes.**

There are several good reasons why Ontario should avoid a major shift in its delivery model for auto insurance at this time.

First, a seismic change in Ontario's business model brings with it significant disruption to customer service; significant job losses in the private sector; major investments in time and money as new computer systems and administrative processes are put in place; high risk of failure and no guarantee that the outcome will be any better than the model you began with unless changes in benefits and process are also introduced at the same time. It is far superior and less risky to carefully analyze what is lacking in the current model and incrementally correct it than to take a giant leap into a new system.

Second, in privatizing the delivery of a financial product, the government is presumably hoping to capture the efficiency of the private sector arising from competition. But to reap this benefit the regulatory control governing the service must be such as to encourage rather than discourage competition and innovation.

Third, and likely most important, the insurance industry like almost every major sector of the eonomy is undergoing major disruption and change resulting from technology and customer demand. Driver-assisted and fully-automated cars will develop new opportunities to understand customer behaviour and tailor-made insurance and financial products will emerge. As well, non-traditional competitors are likely to try to enter the auto insurance field, including technology companies and the car manufacturers themselves as they chase the value chain. All the financial industry players including auto insurance providers are either in the middle of or about to commence major technology and systems investments to capture and analyze customer data. This would be the wrong time to ring fence and bring the auto insurance system in-house. It would be a solution to yesterday's problem while the ground is shifting in unpredictable ways. In times of rapid change, private companies are best poised to innovate and provide competitive services to customers, providing they are freed up to do so.

Recommendation

1. The government should not move to a government-run auto insurance system at this time. There is an opportunity to learn from past experience and fix the problems in the current auto insurance delivery system in Ontario as described in this report.

A Better Future – Fair Benefits

BENEFITS TODAY

It is possible to achieve a much better system. The key is to cut waste, which can come in a variety of forms, such as, overtreatment, failures in coordinating proper care and administrative complexities, not benefits.

Ontario has chosen to retain its relatively rich, no-fault, first-party system with the intent that most of the needs of an injured person could be met without having to go to the courts under tort, as the vast majority of injuries are minor in nature. The richness of Ontario's no-fault benefits is often referred to as an explanation for why it's auto insurance premiums are so much higher than in other provinces. But analysis shows that a more generous no-fault system is fairer to accident victims than one which requires access to tort and does not require more cost. Quebec, Manitoba and Saskatchewan – all public or hybrid systems – all have more generous no-fault systems than Ontario's yet their costs are not only lower than Ontario's, but also lower overall than the provinces with a mix of no-fault and access to tort. So the answer to Ontario's cost problem does not point to lower accident benefits costs.

Recommendation

2. Ontario's current no-fault benefits should not be reduced.

CATASTROPHICALLY INJURED PERSONS

While there is no need to cut Ontario's current accident benefits levels, there is a need for a different approach to the needs of the approximately one per cent of claimants who are catastrophically injured each year.

Table 7: Estimated Number of Catastrophically Impaired (CAT) Claimants in Ontario

Accident Year	CAT claimants originally identified by 2011 survey	CAT claimants identified in 2013 survey	Total 2013 CAT claimants extrapolated for entire market	Total number of reported Accidents*	Total number of reported Injured Persons
2002	376	433	546	244,642	84,192
2003	362	403	508	246,463	77,879
2004	383	466	588	231,548	73,008
2005	457	537	677	230,258	71,850
2006	461	589	743	216,247	68,793
2007	403	570	719	233,487	67,166
2008	273	479	604	229,196	62,743
2009**	-	487	614	216,315	62,562

Source: Ontario Road Safety Annual Report 2011

*****2009 data incomplete for several companies***

Table adapted from the FSCO Three Year Review

The definition for being catastrophically injured is contained in the SABS. It is extremely complex – see Appendix II – and requires several specialists to come to a determination of whether or not an accident victim fits the catastrophic injury definition. This determination is extremely important since the benefits payable to an accident victim judged to be catastrophic are many times higher ($1 million vs. $65,000) than for an injury not judged to be catastrophic. As a result, tens of thousands of dollars – in the range of $15,000 to $20,000 are spent by the claimant and the insurer on medical reports to arrive at or challenge a determination.

As well, the process of arriving at a decision often goes through the dispute resolution system and takes more than a year to resolve (it has yet to be seen how quickly these issues will be resolved at the new License Appeal Tribunal – LAT).

There are several problems with how catastroph -ically injured claims are handled. In the first place, we have a claimant who is put through multiple tests administered by competing sets of doctors. Secondly, the claimant may wait a year or more to receive confirmation of the medical and financial help to which they are entitled during an extremely stressful and life changing time in their lives. The accident victims are, of course, using up their lower tier of accident benefits and accessing the regular OHIP and social support systems as best they can in the meantime. And in many cases, the insurer will advance funds for treatment if the person is obviously catastrophically impaired for life. However, more problematically, the accident victim may resort to financing from one of the settlement loan companies at very high interest rates. Finally, because the process to access benefits is so complex, the accident victim often hires a lawyer in order to properly access them. What can happen then, is the accident victim may ultimately find themselves with significantly less than the $1-million benefit to which they were entitled, since this amount would be partially reduced by the cost of medical exams and legal fees.

A catastrophically injured person's needs change as they age.

In any event, the payment of a cash settlement for needs that can run many years in the future is not well suited to catastrophically injured persons. Injured persons who receive a lump-sum payment during a period of crisis in their lives, should not be forced to figure out how to make the settlement work for their needs, not only now, but also in the future, where they could very well change significantly. As well, lump-sum settlements could very well run out during the lifetime of the injured person.

Alternatives to monetary compensation, how it is delivered and the method of support should be explored. The goal should be to increase the support given to this group of claimants. Specifically, catastrophically injured victims should receive lifetime care. Of the benefits available under the no-fault policy, the benefit for catastrophically injured persons is arguably the most important of all because there isn't the simplicity of treatment that is found in minor injuries.

If the accident benefits system does not fairly address catastrophic injuries, injured parties will go to the tort system if they can. Those who are at fault (30 per cent) will not be able to do so; those who can will pay a heavy price – in time as they fight through the dispute system – and in lawyer's contingency fees and expert fees to obtain any additional benefit.

In Australia and New Zealand lifetime care and support is provided to seriously or catastrophically injured persons. Here in Canada, the Saskatchewan no-fault system offers up to $6.7 million for seriously injured persons in their no-fault system, whereas in Quebec, lifetime care is provided in their no-fault system. Both have lower premiums than Ontario. All workers' compensation boards in Canada also provide lifetime care and support with no upper limits on costs. At the present time, the Ontario Workplace Safety and Insurance Board is looking after some 7,000 seriously injured persons for their lifetime. So, there are several examples of lifetime care being made available to catastrophically injured persons.

A further complication is that the definition of catastrophic impairment in the accident benefits system is causing many challenges both in how to qualify for the benefit and in the details as to how the benefit is to be calculated (see Appendix II). This results in long and expensive negotiations with claimants. Further, where the claimant is also seeking redress under tort, the offset of any accident benefits catastrophic payment is unclear, opening the possibility of duplicate or double recovery, which I address in depth in another section of this report.

The current definition of catastrophic injury and process for qualification of benefits is highly complex and is likely causing more problems than necessary in the system To reduce the complexity, evaluation of catastrophic impairment should be done using an objective guide such as the most current American Medical Association guide and supplemented,where appropriate, by specialized and well established guidelines. The evaluation should be done by a competent, hospital-based independent examination centre (IEC), which is discussed below.

Until lifetime care is made available, these claimants should continue to be awarded lump-sum payments. However, the lump-sum payment should be calculated based on the IEC assessment, using the degree of impairment and an adjustment for age and be made immediately and without delay by the insurance company upon receiving the report of the IEC. There should not be a need for a catastrophically injured person to retain legal counsel. The decision from the IEC should not be subject to dispute or further medical examination. Furthermore, the payment must be made fully deductible from the total settlement received under tort, another issue addressed later in this report.

Recommendations

3. The regulator should undertake serious discussions with the Ministry of Health and Long-Term Care to develop a service for lifetime management of care for seriously injured accident victims. Eventually, as the province develops this expertise, the expertise and even services could expand to address other injuries outside of the auto insurance system. This would allow for continuing improvements in care to develop and recommendations for preventative measures to be generated while ensuring that patients are being treated by a reliable and sustainable system.

4. There should be a minimum of disputes and delays in accessing single lump-sum awards for those who are catastrophically injured. Such awards, should be efficiently and quickly determined by an independent examination centre and based on objective measures, such as the American Medical Association guide, supplemented, where appropriate, by specialized and well-established guidelines.

5. Insurers should make sure that seriously injured persons are given top priority and do not need to hire lawyers or other professionals to get their entitlement.

A Better Future – Benefits Fairly Delivered

It is necessary and essential to find a better way to resolve the issue of how to efficiently diagnose and treat injuries under the no-fault system.

PROGRAMS OF CARE

As stated earlier, the central failing of Ontario's auto insurance system – and the largest contributor to its cost – is the singular inability of participants to agree on what constitutes an appropriate medical diagnosis and treatment for injuries. Again, improved health outcomes must be the central goal of the system.

The SABS provides for a $3,500 financial limit within which the majority of injuries – sprains strains and minor whiplash injuries – ought to be satisfactorily treated. The $3,500 limit for treatment automatically starts the process of debate over cost rather than care. It invites claimants and lawyers to find ways to show that their injuries do not fall within the definition of a "minor injury" and hence need to breach the financial limit and access the greater benefits in the $65,000 limit applicable to more serious injuries. On the other side, insurance companies may also fight to keep claimants to the minor injury limit if at all possible.

In the course of this dynamic, claimants, lawyers and insurers spend large amounts of money – up to $2,000 on each medical evaluation – and insurers end up rejecting between 25 and 30 per cent of the amounts proposed for treatment each year. The efficacy of this process can be judged by the fact that 25 to 30 per cent of claims go into a dispute resolution system where they take longer and cost much more to settle (see Appendix VI). Cunningham's Interim Report states that 61 per cent of disputes concerned medical benefits and related assessment and examination expenses.[19]

Since there is no monitoring of medical outcomes, it is highly uncertain whether accident victims are indeed getting the right kind of care in the right facilities. Drs. Côté and Soklaridis observed in an article in Spine Journal:

"It is an unsettling fact that most interventions used in clinical practice are not supported by scientific evidence. … It is likely that a high proportion of patients are treated every day with ineffective or unproven clinical interventions. These findings emphasize that clinicians need to be educated on the use of evidence based interventions."[20]

It is necessary and essential to find a better way to resolve the issue of how to efficiently diagnose and treat injuries under the no-fault system.

Programs of care

The solution is to adopt programs of care, based on the principles of evidence-based medicine, for the most common (70 to 80 per cent) of injuries. Programs of care are patient- and outcome-focused for the best results in treatment. They are designed around what the patient needs, not the processes of the providers. They are also focused on health outcomes for the patient not the number of treatments provided.

Michael Porter and Thomas H. Lee, in their Harvard Business Review article, put it this way:

"In health care, the days of business as usual are over. Around the world every health care system is struggling with rising costs and uneven quality despite the hard work of well-intentioned, well-trained clinicians. Health care leaders and policy makers have tried countless incremental fixes – attacking fraud, reducing errors, enforcing practice guide-lines…but none have had much impact. Its time for a fundamentally new strategy. At its core is maximizing value for patients…We must move away from supply-driven health care systems organized around what pysicians do and toward a patient-centered system organized around what patients need. We must shift the focus from the volume of…physician visits…procedures and tests – to the patient outcomes achieved."[21]

Programs of care minimize uncertainty and disputes about what treatment is needed on a case by case basis. The vast majority of accident victims get proven care strategies and insurers do not dispute them. This provides quality care on a consistent basis, reduces delays and saves enormous cost and aggravation, while creating a fair system where accident victims are no longer forced to navigate a complex system, or find themselves caught between lawyers and insurers.

Programs of care are developed for specific types of injuries, the most common and high-volume ones. For example, there will be a program which treats muculoskeletal injuries such as whiplash, others that treat low back injuries, shoulder injuries, mild traumatic brain injuries and so forth. The programs set out clear expectations to providers and insurers: the treatment goals are defined, the duration of the care is defined and the total fee for the treatment is set.

Importantly, providers should be required to examine the patient and record their medical condition – level of pain, functionality of injured body part – prior to commencing the program and then to measure and report on the outcomes of the treatment.

Porter and Lee put it this way:

"Rapid improvement in any field requires measuring results – a familiar principle in management. Teams improve and excel by tracking progress over time and comparing their performance to that of peers inside and outside their organization. Indeed, rigorous measurement of value (outcomes and costs) is perhaps the single most important step in improving health care."[22]

Where they are used, programs of care have been developed in consultation with the relevant professional bodies and are well understood by all providers. For example, the musculoskeletal program of care used for injured workers in Ontario was developed with the participation and contribution of regulated health professional associations, namely the Ontario Chiropractic Association, the Ontario Physiotherapy Association, the Ontario Society of Occupational Therapists and the Registered Massage Therapists' Association of Ontario.

Variations of programs of care are in use in many jurisdictions including in auto insurance delivery systems in Alberta, Nova Scotia and some states in the United States, as well as in workplace injury systems throughout Canada.

The Ontario Auto Insurance Anti-Fraud Task Force Final Report expressed the view that (well-defined) evidence-based treatment protocols could make fraudulent behaviour more difficult and made the following recommendation:

"The government should reduce uncertainty and delay for those who have legitimate auto insurance claims by moving aggressively to introduce treatment protocols for minor injuries that are based on scientific evidence."[23]

In Alberta and Nova Scotia, diagnostic treatment protocols (protocols), which are similar to programs of care, provide a structured model for the treatment of strains, sprains and whiplash injuries. The focus of the protocols is patient recovery.

The patient is entitled to the number of treatments under the protocols, subject to the health professional's opinion. The treatments may not be disputed by an insurer and are considered pre-approved. Reasonable and predictable costs have been negotiated with providers, patients are treated quickly and appropriately, and treatment providers understand the parameters within which they are working and treat their patients accordingly. Disputes around the protocols themselves are infrequent because they have been established in consultation with the relevant medical practitioners and organizations.

Under the guidance of FSCO, Ontario has already made a start along this path through the development of a Common Traffic Injury Guideline, which lays out very detailed, evidence-based treatment paths for common injuries and was designed after consultations. This work would be a good starting point from which to develop appropriate programs of care for the auto insurance industry in Ontario.

The issue of quality control of health care providers was raised more than once during my study. Professional groups of providers suggested that while most practitioners were honest and competent there exist some who are not providing appropriate care.

No doubt there will be some providers who are not meeting acceptable standards. The Ontario Auto Insurance Anti-Fraud Task Force had several suggestions to address this issue. There is a practical means of promoting good providers and dis-incenting poor providers and that is to monitor the effectiveness of treatment and the outcomes achieved. This is an essential part of the process of improving both the design and the execution of programs of care. Monitoring of provider performance also helps detect and manage fraud to the extent that it exists.

While several useful and necessary programs of care have already been developed in other systems, there is always more to be done. There are more needs that must be urgently addressed. For example, chronic pain, stress related impairment and post-traumatic stress. These medical conditions have been recognized by the courts as legitimate injuries but they are often extremely difficult to diagnose and treat. They are also a significant factor in the rising cost of benefits in the auto insurance industry. Rather than passively waiting for solutions to emerge, the insurance industry should be conducting research to develop evidence based standards for the diagnosis and treatment of mental injuries.

INDEPENDENT EXAMINATION CENTRE (IEC)

Both the Alberta and the Ontario Workplace Safety and Insurance Board (WSIB) systems have a process by which an injured person is referred to an independent expert where a program of care has not resulted in the full recovery of the injured person. In the WSIB system, where a program of care is not working or there is uncertainty around the appropriateness of different care programs, the patient is referred to a regional evaluation centre (not dissimilar to the independent examination centres, or IECs, defined in this report). The purpose of the referral is to provide and expert diagnosis of the present condition of the patient and to recommend future care needs.

In Ontario, the IEC would be a hospital-based service that brings multidisciplinary skills to the assessment and treatment plan for a patient. Being hospital based, physicians from multiple disciplines can be brought in to the assessment, as required. The IEC is also required to contact and have a conversation with the patient's family doctor who can provide a whole person context to the situation at hand. The role of the IEC is to examine the patient to establish a diagnosis and to provide recommendations on the best treatment options to facilitate recovery. The role of the IEC is forward looking and helpful to both the patient and the insurer in terms of the best options for future care. It is not concerned in any way with approving or denying a claim.

At WSIB, typical costs for a multi-discipline examination and treatment plan is much less expensive than the cost of medical examinations in the Ontario auto insurance system in two ways. It costs less than the $2,000 per opinion that is currently paid by the Ontario auto insurance system and the injured party does not have to submit to multiple separate examinations. As a point of reference the total cost of medical examinations paid by the WSIB in a year is about $26 million for a system handling 170,000 injury claims a year, compared with the approximately $350 million currently paid in the Ontario auto system for handling just 60,000 injury claims.[24]

To be adopted in the Ontario auto insurance system, the auto insurance regulator must keep a roster of reputable, competent, hospital-based IECs to which insurers can refer patients for assessment. The regulator would need to monitor the quality and timeliness of the advice given. Further, it is essential that the opinion of the IEC be taken as final and not subject to competing opinions from either the insurer or the patient. For this reason, it is also essential for the IEC to be a hospital-based team that can bring multidisciplinary skills to the evaluation and recommendation for treatment. Hospital-based teams already meet high medical and ethical standards. The WSIB, for example, has thirteen hospital-based centres on its roster, including Sunnybrook Health Sciences Centre and the University Health Network in Toronto, Health Sciences North in Sudbury and others located across the province. This model could be explored, as it provides an example of how the roster of IECs could be developed throughout the province.

The Ontario auto insurance system did try to institute something similar to the IEC concept with the introduction of Designated Assessment Centres (DAC) in 1994. These were discontinued in 2006 for several reasons. In the first place, DAC evaluations were used late in the claims process – that is as means of accepting or denying a claimant medical care as precursor to a mediation or arbitration hearing or litigation. Furthermore, DAC asessments were not unique. A claimant would have gone through asessments by the insurer before being asessessed by a DAC, and either party could dispute the DAC assessment during the dispute resolution process. DAC asessments were often long, drawn out and expensive, as several experts, frequently from different organizations, were asked for separate opinions based on their area of competency. Furthermore, arbitrators and courts failed to give a DAC opinion any degree of deference over any other medical opinion produced by either the claimant or the insurer. If this wasn't bad enough, the independence of the DAC opinion became compromised as DAC asessors also frequently acted on behalf of insurers or claimants in providing medical asessments to them separately. Ultimately, with a lack of respect for the DAC process, the cost and time involved and the independence brought into question, the DAC system failed and was discontinued.

In contrast, the IEC process is quite different in its purpose, its conduct and its process. An IEC evaluation takes place much earlier in the treatment cycle. It is not designed to accept or deny a claim. It is designed to provide guidance as to the best options for future care in cases where a program of care has not resulted in satisfactory recovery of the injured party. The IEC is hospital based and has access to a wide variety of medical and rehabilitation experts. In this role, the IEC is an extraordinary resource of first class expertise to aid in the treatment of the patient. IECs are also completely independent of either the insurer or the patient and they come with the quality control of a major hospital organization – their orientation and high level of competency is to provide the best possible medical advice.

In terms of the volume and intrusiveness of insurer medical exams, one of the issues with the current system is the frequency with which medical exams are sought by the insurers and claimants. As reported above, some 30,000 to 35,000 claimants per year, more than half of all claimants, are subjected to medical examinations at a cost of $9,000 for the life of the claim. Because the proposed system will be based on programs of care, there will be greater certainty around treatment and the need to dispute will be greatly reduced. Only those patients who are not responding to the programs of care will be referred to an IEC. Those referrals will not be in order to deny a claim. The IEC, in consultation with the patient's family physician, conducts an examination and makes a recommendation for additional care, where appropriate, in order to help the patient make a sound recovery.

Recommendations

6. The regulator should move as quickly as possible to create programs of care for the most common types of automobile injuries. The programs should be based on the evidence-based findings of the Common Traffic Injury Guidelines.

7. The regulator should be provided with a sufficient budget to monitor and continuously improve the outcomes of existing programs of care and partner with the government on research into the development of new programs of care as the need arises – for example for neurological injuries, injuries from concussions, spinal cord injuries, chronic pain and post-traumatic stress disorder. Consideration should be given to leveraging existing programs of care that have been developed by other jurisdictions.

8. The government should empower the regulator with the authority and direction to establish a roster of independent examination centres (IEC) which should be hospital-based and must be able to provide a multidisciplinary team to provide appropriate diagnoses of injured patients and recommended treatment plans. Insurers must follow, without dispute, the recommendations of the IEC for future treatment within the financial limits of the insurance policy as provided by law. The dispute resolution process must respect the evaluation of the IEC without resorting to competing opinions from either party to a dispute.

9. The regulator should conduct regular quality control studies of the outcomes of future care recommended by IECs to monitor the quality of such recommendations and ensure their effectiveness. As part of this process the regulator should consider instituting a system of professional peer review of roster asessors to ensure quality is maintained.

10. The regulator should undertake a complete overhaul of the pricing schedules for treatment by providers and evaluators to bring them more in line with prices being paid by other similar bodies, such as workers' compensation boards, and to emphasize outcomes rather than the number of treatments.

PROVIDE CARE NOT CASH

The intention of the legislation is clearly to provide accident victims the medical care they need to recover their health with some income replacement support as a bridge during the recovery period. The legislation never intended the auto insurance system to be a cash jackpot. Many insurance companies, however, are incented not to see their role as providing medical care to their clients. Rather, they are incented to close their liability with as little cash cost as possible and hence they introduce the practice of negotiating cash settlements with claimants in lieu of medical treatment, future wage loss and other future benefits under the SABS. In Cunningham's Interim Report he put it this way:

"Disputes and settlements need to be focused on getting claimants timely access to necessary treatment and assessments."

— Justice Cunningham

"Although I sympathize with the insurance industry's desire to close files on a full and final basis, I find the practice in some circumstances counter-productive. It only encourages the type of behaviour insurers have raised with me during this review. Other insurance systems such as worker's compensation or supplementary health plans will never or only in exceptional cases pay a lump sum for future health care benefits. I would support extending the one-year prohibition on settlements if it would have an impact on the 'cash for treatment' approach to care that is widely practiced. Disputes and settlements need to be focused on getting claimants timely access to necessary treatment and assessments."[25]

Justice Cunningham is referring to the practice of insurers to want to get a full and final release of the claims against them so that they can finalize their cost and release any capital that is tied up to support future amounts that might be owing on the claim. Hence insurers often drive towards getting a release on settlement of all future claims via a lump-sum payment.

This practice is counterproductive and goes against the main goal of the system which is to provide the necessary medical care and related support – not to provide a cash lump sum in lieu of care. Trying to estimate the care and other benefits needed in the future leads to lengthy negotiations over amounts which may or may not ever be put to the uses estimated.

It also introduces professional negotiating via lawyers, which can result in a large dose of exaggeration and gamesmanship on both sides in an attempt to figure out what the other party is likely to settle for, not necessarily what the claimant actually needs. As long as there is a prospect of a lump-sum payment at the end of a process, injured parties may be advised to boost a claim in order to maximize the size off the payment. This does not serve either the injured person well (boosting a claim requires spending money on expert opinions and lengthening the time of disability) nor does it serve the system as a whole since added costs which are not necessary increases the cost of insurance for all participants.

To avoid this situation a major cultural shift needs to occur. As a start, insurers must stop pushing to reach full and final releases from their clients. A claim should be handled on its merits. If health care is needed it should be provided either through the programs of care mentioned above or through the diagnosis and treatment recommended by the independent examiner –within the dollar and time limits of the policy.

Once the claimant reaches medical recovery the claim is closed, but the claimant can return for more treatment – up to five years after their injury or other time limit in the legislation – if they can show that their condition has resurfaced and that it can be related to the original accident. This process has two big advantages: there is an incentive for the insurance company to stay in touch with their client to ensure they get the proper medical care so that they can return to normal function as quickly as possible; and there is no pressure to keep the claim open for long periods of time while negotiations for a release go on. The patient can come back for more treatment if that is what is fair and right.

With respect to the impact of removing a cash incentive, the study by Dr. David Cassidy et al. reported that when the Province of Saskatchewan changed its auto insurance system from a tort system where all compensation was given in cash vs. treatment to a no-fault system where treatment was provided instead of cash, the Saskatchewan system experienced a 28 per cent reduction in whiplash claims. Median time to closure of whiplash claims came down from 433 days to about 200 days. The study goes on to say that a decision to make a whiplash claim could involve factors beyond actual medical need and include a prospect of financial gain.[26] As pointed out by the Ontario Auto Insurance Anti-Fraud Task Force, the adoption of programs of care combined with the elimination of cash for care will have the effect of substantially reducing the opportunity for fraud in the system.

In terms of the need to tie up capital against future claims, experience within the worker's compensation system shows that the majority of claimants, once they have recovered from their injury do not need further care and do not come back for more treatment. Those that do, account for a fairly small proportion. The actuaries will quickly adapt to the rate of recurrence and are able to advise management as to how much capital to set aside for this eventuality. This is also the process followed by the Quebec auto insurance system which has demonstrated that their costs are the lowest in Canada.

Recommendation

11. There should be no cash settlements in the accident benefits portion of the Ontario auto insurance system for those benefits specified in the legislation as being for medical and rehabilitation care. Where the legislation provides for cash payments, for example for lost wages and lump-sum payments for catastrophically injured persons, these would, of course, continue to be paid.

LEGAL REPRESENTATION, ADVERTISING AND CONTINGENCY FEES

> **"Money out of the pockets of claimants."**
>
> **— Justice Cunningham**

Insurance companies reported to me that about 25 to 35 per cent of claimants – some 15,000 to 20,000 a year – come to them at the time of making a claim or shortly thereafter with a lawyer already hired. From this point on, the insurance company must deal with their client only through their lawyer.

The incidence of legal representation quickly rises through the handling of the claim as difficulties arise. Going into the dispute resolution system at FSCO, there was virtually 100 per cent legal representation of clients and there is little reason to believe this situation has changed with the move of the dispute resolution system to the Licence Appeal Tribunal.

Legal fees are not cheap. In the no-fault system alone the cost of contingency fees annually is approximately $100 million, and in the tort system the contingency fees are about $400 million. And this doesn't count the legal costs incurred by insurers. (see Table 6 above). Clearly, a better way to deliver fair benefits to accident victims needs to be found.

Justice Cunningham's Interim Report states:

"Ontario's auto insurance system is extremely complicated.... Not only are the SABS complicated but so are the forms required to be completed by claimants to apply for benefits or for mediation and arbitration. ... In its early days, many clients accessed the DRS without a representative. This is no longer the case. ... Legal representation is not free and not necessarily inexpensive. Legal representatives are charging SABS claimants contingency fees which I am told can be as high as 30 or 35 per cent. This is money out of the pockets of claimants who need these funds to replace lost income and pay for treatment."[27]

In many ways, the need to have lawyers involved to negotiate settlements in what should be a straightforward, no-fault, accident benefits system signals a failure in the system. The system should not be as complex as it has come to be, there should not be so much uncertainty that neither accident victims nor insurers are confident as to what constitutes fair benefits.

Many of the recommendations in this report are directed at improving this situation. The simplification of the regulations referred to in a section below; the introduction of evidence-based programs of care, delivered promptly and without dispute, an independent examination centre to guide future care if needed and strong oversight by the regulator are all measures which should greatly improve speed of access to benefits, reduce the time to recovery and reduce disputes. In the section under improvements to the tort system, the recommendation that the independent examination centre opinion on the medical condition of the accident victim and the indication of future care be given deference by the court will further improve the quality and independence of evidence provided to a court.

Contingency fees permit enhanced access to legal representation, nevertheless, it is clear that there are concerns with how the contingency fee regime is operating in Ontario auto insurance cases today. The Law Society of Upper Canada's Professional Regulation Committee (LSUC Committee) looked into the issue of advertising, contingency fees, referral fees and related matters in the practice of personal injury law. The LSUC Committee recently issued its final report which did not provide specific recommendations on contingency fees. However, in its June 23, 2016, Interim Report to Convocation, the Committee addressed Advertising and Fee Arrangements and had this to say:

- In Ontario, lawyer advertising appears to have rapidly become "big business."
- Referral fees – the practice of obtaining clients through advertising then passing them onto other lawyers for a fee – in personal injury law have become unreasonable and disproportionate and in many cases clients are not sufficiently aware that they are being referred to another lawyer.
- Due to the high cost of acquiring cases, counsel might not be able to afford to spend adequate time with the client or be prepared to take the case to trial if necessary.
- The Working Group is concerned that contingency fee pricing is not currently sufficiently transparent at the outset to consumers. In the personal injury market, the fee that a prospective client can expect to ultimately be charged often remains opaque, and it is difficult to determine whether a competitive fee structure is being proposed.

One area of particular concern is the reported practice by some lawyers of double dipping, which is, keeping part of the legal costs awarded to clients or charging their contingency fee on top of the legal costs. Keeping the disbursements and other practices not fully explained to the client up front are either in violation of the Solicitors Act or potentially questionable.

One of the more serious and unfortunate results of the delay in finalizing claims in the Ontario auto insurance system is the burden it places on claimants when they do not receive timely assistance. Consequently, clients often suffer financial hardship. To meet this need, specialized firms called settlement loan companies step into the picture. The settlement loan companies state that the loan is on a contingency basis, promising that no credit check is necessary and no principle or interest is payable unless the client wins a settlement from the insurance company. These companies provide bridge loans to auto insurance claimants ranging from an estimated $500 to $50,000 at high interest rates. There is very little transparency on who owns these settlement loan companies, how they obtain their financing and who refers clients to them.

Handling of an accident benefits claim in a no-fault system ought to be straightforward. There should be very little, if any reason to have to hire a lawyer or resort to a finance company to provide a bridge loan, especially in cases where there are minor injuries. In the future, when the core entitlement decisions are readily determined by programs of care and neutral independent examiners, there should be little structural need for conventional litigation and a consequent improvement in both health outcomes, and the efficiency and cost of the system.

Recommendations

12. There is clear urgency to make the accident benefits system simple and accessible without the need for legal representation. Since accident victims are in a vulnerable position and contingency-fee arrangements are not very transparent, the government should consider:

- **Banning or restricting advertising and referral fees, and restricting contingency fees in personal injury cases, as the law society reports is being done in some jurisdictions such as in England, Wales and Australia.**
- **Requiring contingency-fee arrangements to be filed with the regulator, who should inquire into their fairness on a spot-check basis and work with the relevant authorities to curtail abuses if they arise.**
- **Settlement cheques should be made payable jointly to the accident victim and the lawyer. This will allow the accident victim to clearly understand the relationship between the total settlement and what he or she eventually receives.**
- **Claimants should be informed in writing, possibly on a final settlement schedule, of their right to appeal the fees charged by their lawyer and where to apply to do so.**

13. The regulator should monitor the overall use of legal representation in the accident benefits system to analyze why claimants are needing to resort to legal advice. Also, the regulator should examine if the system should be further simplified, barriers should be removed or other practices changed to reduce the need for the time and expense of legal involvement.

14. The regulator should monitor, on a continuous basis, the length of time insurance companies are taking to provide benefits to claimants and determine if undue delays are causing financial harm to accident victims.

Dispute Resolution

In his final report, Justice Cunningham observed:

"One of the things I quickly realized…was how polarized the system has become. I am certain that when the first no-fault auto insurance system was introduced in 1990, policy makers did not contemplate that the claims process and the [dispute resolution system] would become so adversarial. This was very much reflected in the feedback received from stakeholders. The insurance industry points to the plaintiff bar as the source of the system's problems, while the legal community blames the practices of the insurance industry. Neither is an accurate portrayal of the current system."[28]

In the Ontario auto insurance system, in one out of every three cases, the insurer and the claimant cannot agree on what is a fair compensation for the injury involved. Until the Licence Appeal Tribunal began in April 2016, accident benefits disagreements were first sent to mediation and evidence shows that almost 40 per cent of the time the disagreements were not resolved at mediation and cases proceeded to arbitration (see Appendix VI). Justice Cunningham made proposals to streamline the process of mediation/arbitration and his proposals have for the most part been accepted and implemented this past year. And, while on the right path, there is more work to be done to improve the system.

The recommendations noted in earlier sections regarding introduction of programs of care, continuous care, absence of cash settlements and an independent examination centre should go a long way towards reducing disputes in the no-fault system. There should be a goal to achieve a dispute level of no more than 10 per cent compared to the current average of over 30 per cent. Later, even more challenging goals can be set.

Following Cunningham's Final Report, the dispute resolution system moved from FSCO to the Licence Appeal Tribunal of the Safety, Licensing Appeals and Standards Tribunals Ontario and many reforms were put in place.

INTERNAL APPEAL PROCESS

Justice Cunningham recommended that insurance companies set up an internal appeal process. The system of dispute resolution can be greatly helped if it becomes mandatory for insurers to have an internal appeal process. It should be staffed with case managers who have the experience and judgment to review decisions made by front line staff. The appeal team should be required to issue written decisions with explanations and support for their opinion.

Experience in the Quebec auto insurance and worker's compensation systems has shown that an internal appeal function can usually resolve half or more of disputes without the need to go any further. The internal appeal function adds further value by acting as a feedback and training loop for front line staff who learn about mistakes they may have made and are able to improve their decisions going forward. It also gives management an opportunity to adjust and change procedures based on results from the appeal team.

The auto insurance regulator should monitor the functioning of the automobile insurance dispute resolution system. For example, if a particular insurance company is generating an unusual number of appeals at the Licence Appeal Tribunal or an unusual level of reversal of their adjudicative decisions on claims, the regulator should be given the right to audit and examine the internal management and training practices of those insurers with a view to improving decision making and lowering the number of disputes going to the dispute resolution system.

GATEKEEPER FUNCTION

There is great value in establishing a gatekeeper function at the Licence Appeal Tribunal, as recommended by Justice Cunningham. More recently, a gatekeeper function has been established at the Licence Appeal Tribunal. Experience in other systems shows that this function can significantly improve the efficiency of a dispute resolution system by ensuring that claims have all the necessary documents and qualifications to proceed to examination. The gatekeeper should perform two important services.

First they must make sure that an appeal is ready to proceed, that is, all the required documents are present and all processes have been followed, which is now in place. The gatekeeper function should also insist that the claimant provide evidence of having gone through the insurer's internal appeal function before allowing the claim to proceed further.

Second, the gatekeeper must determine if new information is being introduced that has not previously been shared by either party with the other. The dispute resolution process should not become an exercise in gamesmanship or ambushing an opposing party. If there is new information that is relevant to the case it should be presented back to the original decision-maker at the insurance company or to the claimant. This might well change the decision and avoid the need to proceed any further. Only after the new information has been thoroughly considered and a new decision rendered should the appeal be allowed to proceed through the formal appeal process if necessary.

EXPERT WITNESSES

Overwhelmingly, disputes centre around or are related to the medical condition and necessary treatment of claimants. Trying to resolve this type of dispute through the process of sifting through competing expert opinions is not the most efficient or even the best way to arrive at fair conclusions. Both insurer and claimant will seek experts whose opinion is likely to support their position.

Justice Cunningham put it this way in his final report:

"Part of the culture shift that I see being needed within the Dispute Resolution System (DRS) is that medical experts appearing before adjudicators should have a duty to the DRS and not to the party that has retained them. Experts should be required to certify their duty to the tribunal and to provide fair, objective and non-partisan evidence. Arbitrators should ignore evidence that is not fair, objective or non-partisan."[29]

In order to meet the standard of objectivity and professional competence, adjudicators should be required to rely on the opinion of the independent examination centre (IEC) referred to above. IECs will be selected by the regulator who will create a roster of such centres. In the first place this serves the injured person extremely well since he or she will be getting advice from a highly qualified and independent team. Secondly, the opinion of the IEC can be relied upon, in the great majority of cases, to reflect some of the best medical thinking and techniques available.

As described earlier, the opinion of the IEC, in consultation with the family physician, must be relied upon during the management of care in the first instance that it becomes apparent that the current approach to treatment is not working. It should also be taken as final in the case of a claim going into dispute resolution. The case manager at dispute resolution may ask for a second evaluation from the roster of IECs if it appears necessary for whatever reason, but there must be no submission of competing evaluations by either the insurer or the claimant. This process would best satisfy the essential requirement that an expert witness be competent and objective and not beholden to either party in a dispute. It would also allow disputes to be handled efficiently, with less cost and with the least damage to trust in the system.

Dispute resolution in New Jersey's auto insurance system has an analogous provision. There, the arbitrator of a dispute must use a certified medical review organization as designated by the New Jersey Department of Banking and Insurance to perform a medical review of the claimant's case. The determination of the medical review organization is presumed to be correct unless the arbitrator finds the opinion to be clearly wrong, in which case he or she must provide written explanation of the reason.

Recommendations

15. Insurers should be required to establish an internal appeal process to provide an early resolution to claims and reduce the number that have to proceed to the external dispute resolution system. The regulator should monitor the effectiveness of the internal appeal process and be empowered to order corrective action if a particular insurer is generating an unusual number of claims to the dispute resolution process.

16. The gatekeeper function at the Licence Appeal Tribunal should insist that a claim has gone through the insurer's internal appeal process before allowing it to proceed further. The gatekeeper should also determine that if new information is being introduced in the claim, it should go back to the original decision-maker to see if it changes the decision before the appeal proceeds.

17. In relation to medical condition and treatment, the opinion of the independent examination centre should be taken as definitive by arbitrators. If, in exceptional circumstances, the arbitrator has reason to be concerned about the independent examination centre opinion under consideration, the arbitrator can ask for a second opinion from a second independent examination centre from the regulator's roster. Competing examination opinions from experts hired by either the claimant or the insurer should not be permitted.

Bringing Simplicity and Responsiveness to the System

Generally, all parties who participate in the system agree that is that the current legislation and SABS is complex and very difficult to interpret. This is surely a major contributing factor to disputes and disagreements.

The Ontario Trial Lawyers Association's (OTLA) letter to me observes:

"Those who work daily within this system have a difficult time interpreting the complex legal maze that is now Ontario auto insurance. ... The ability of the average policyholder to competently manage his or her own insurance claims and related disputes is essentially non-existent. .... Both the tort and accident benefits legislation and regulations involve multiple, often incomprehensible tests for benefit and compen-sation entitlement that have led to decades of litiga-tion, at an enormous cost. As much as possible, we must eliminate those tests that lead to uncertainty and litigation."

"The ability of the average policyholder to competently manage his or her own insurance claims and related disputes is essentially non-existent."

— Ontario Trial Lawyers Association (OTLA)

Justice Cunningham put it this way:

"The SABS has become a complex and difficult document to interpret; many stakeholders noted that it is very difficult to work with it. Insurance companies need to make a considerable investment in training and developing adjusters, as does FSCO in respect to its mediators and arbitrators. Claimants need to find representatives well versed in the regulations. The learning curve associated with the SABS adds cost to the system**. Other no-fault schedules are far less complex and not so procedure-oriented** [emphasis added]. Everyone would benefit from a wholesale review of the SABS in an effort to simplify the regulation."[30]

See Appendix IV for the sections from the SABS that describe income replacement benefits, one of the main types of benefits available under the auto insurance policy. There are various procedural and definition provisions that would be relevant to a claim, but these are the main sections that set out the terms and amount of entitlement. It would take many close readings of this section to understand what the entitlement to benefits amounts to, if indeed a lay person were able to understand it at all.

There is an urgent need to address the complexity of the auto insurance regulations.

There should be well defined schedules of benefits with limited or no need for complex adjudication. The Société de l'assurance automobile du Québec (SAAQ) website offers a good example of simple, clearly understood benefits and how to access them.

The new rules should encourage the direct contact of insurers with their clients so that insurers and health care providers can work collaboratively for the health care needs of their client.

Having the regulator responsible for formulating the rules (as opposed to government amending regulations) will allow this function to respond to the need to change and evolve much more efficiently than the current structure that has to be deployed before any change can be made.

Moreover, the rules should focus on outcomes rather than process. Instead of particular forms to be used there should be a requirement to meet certain standards; for example, standards of care, standards of fair treatment, benefit of the doubt to claimants and other key components of a well-functioning system.

Recommendations

18. There is an urgent need to revise and simplify the legislation and current set of regulations and focus on desired outcomes and less on the details of process.

19. The new regulator should be given authority to make regulations (already underway). Rules should support insurers to be in direct contact with their clients so that they can manage care and recovery for their clients.

CONSUMER CHOICE – LEAVE IT TO THE MARKETPLACE...

The question of consumer choice is a difficult one to address since the auto insurance system at its heart is a safety net designed to provide needed coverage and not a suite of options based on the personal opinion of the policy holder. Consumer choice in this context usually means allowing drivers to pick a less costly coverage if they are willing to take the risk of a lower safety net. This may result in a compromise of people's safety or a lack of access to necessary treatment. On the other hand, the option to buy more coverage brings with it the need to ensure there is transparency across insurers and some confusion and lack of understanding of what is being purchased may result.

Having said that, there is a legitimate question as to how far the safety net should extend. Should the mandatory safety net cover just the most serious injuries? After all, coverage costs money. Should the government insist on coverage for catastrophic injuries and allow consumers to buy coverage for less serious injuries if they want to?

These questions lie at the heart of consumer choice. If current trendes like ridesharing are any indication, increasingly in the future, consumers will push to be allowed to tailor their purchases to their needs rather than be forced into a one size fits all product. How the government addresses this movement is of great importance. This is not the purview of this study, but it is true to say that it is an issue that is not going to go away and that the government needs to equip itself with sufficient structures and research to understand what society is likely to need in the near- and medium-term future. All of these issues should be taken into consideration as the new regulator is established.

Having said that, there are some particular cases where consumer choice can make sense. For example, according to the Canadian Life and Health Association close to 70 per cent of drivers have access to some form of medical or income replacement insurance, mostly through their workplaces, in addition to carrying auto insurance. At the same time auto insurance is a second payer – after other insurance coverages of the claimant have been used – which means that for those drivers who already have workplace insurance, they are caught between two competing insurance companies with potentially different claims processes and criteria for accepting claims. As well they must first use up their workplace insurance entitlements before they can access their auto insurance. This is a source not only of administrative complexity but also a source of surprise and frustration to claimants.

As well, there are several drivers who, due to their youth or other circumstances, would like to carry less insurance than the standard policy. After protecting others through a minimum liability insurance, a sensible system of consumer choice whereby a person may consciously take less auto insurance and save money should be explored.

At the other end of the scale, insurers should be empowered to offer additional coverages and new products if consumers are willing to pay and insurers should be encouraged to innovate and introduce new products.

Consumer choice is a powerful force that is going to change the nature of auto insurance in the not too distant future. An independent regulator held accountable for the functioning and responsiveness of the system, less prescriptive regulation, more outcome-based regulation and more flexibility on setting price should all be part of an overall regime to encourage and adopt innovation.

PROVIDING ENHANCED EDUCATION TO CONSUMERS

One of the frequent observations of stakeholders familiar with the sytem, is that consumers are generally ignorant of their insurance coverage and hence become annoyed and feel taken advantage of when it comes time to access benefits. Simplifying the regulations concering entitlements will go a long way to increasing transparency and trust.

Two actions might further improve this situation:

One consideration could be to institute an “Office of the Driver Adviser” or something similar to the proposed “Office of the Consumer” to the Financial Services Regulatory Authority. Such an office would be available to explain how auto insurance works, how to access benefits efficiently and the rights and obligations of drivers. Second, it may be useful to consider making some basic insurance concepts part of the driver education program and requirement to pass a driving test.

The Ontario Auto Insurance Anti-Fraud Task Force also had a number of good suggestions to help create an informed consumer as a protection against illegal or fraudulent practices. The task force’s final report suggested, among other things:

“With respect to *prevention*, our key recommendations include:

- “The government should join with insurers to form an Anti-Fraud Awareness Implementation Group to implement a consumer engagement and education strategy. This group should oversee the creation of:

- "educational material in different media that could instruct consumers at critical moments such as when they learn to drive, select an insurer, choose optional coverage, collide with another vehicle or make an insurance claim; and
- "a dedicated, multilingual website that would explain how to make an auto insurance claim, what to expect by way of treatment and recovery after an injury, and how to avoid, detect and report improper activity."[31]

Recommendation

20. Consumer education in the field of auto insurance is a key component of a well-functioning system. In conjunction with making the rules and regulations governing the system simpler, the government should seriously addressthe need for enhanced consumer education. The recommendations of the Ontario Auto Insurance Anti-Fraud Task Force and the creation of an "Office of Driver Adviser" should be considered.

ENSURING GOOD FAITH

At present there are no specific rules about the consequences of false statements in the context of tort liability claims for damages. This needs to change to send a clear signal that the tort system will not be used to fuel fraudulent claims.

Claims under insurance policies, including claims for accident benefits are subject to provisions that apply consequences if a person makes a false statement. The logic for this is strong. Benefits administrators largely depend on the claimant's own recitation of facts, portrayal of symptoms and assertions of impairment in order to evaluate entitlement. Assessors and adjudicators also must make decisions based on the veracity of the claimant's own description of condition and circumstance. Much hinges on that foundation of personal credibility.

If a testimony is not reliable, then the system is deprived of the best evidence necessary to determine entitlement.

The Insurance Act recognizes the public policy of negating entitlement for dishonest claimants. Section 233 of the Insurance Act states:

> **Misrepresentation or violation of conditions renders claim invalid**
>
> **233. (1) Where,**
>
> > **(a) an applicant for a contract,**
> >
> > > **(i) gives false particulars of the described automobile to be insured to the prejudice of the insurer, or**
> > >
> > > **(ii) knowingly misrepresents or fails to disclose in the application any fact required to be stated therein;**
> >
> > **(b) the insured contravenes a term of the contract or commits a fraud; or**
> >
> > **(c) <u>the insured wilfully makes a false statement in respect of a claim under the contract</u>,**
>
> **<u>a claim by the insured is invalid and the right of the insured to recover indemnity is forfeited</u>. R.S.O. 1990, c. I.8, s. 233 (1).**
>
> **Statutory accident benefits protected**
>
> **(2) Subsection (1) does not invalidate such statutory accident benefits as are set out in the Statutory Accident Benefits Schedule. R.S.O. 1990, c. I.8, s. 233 (2); 1993, c. 10, s. 1.**

Section 233 broadly applies the false statement rule, but subsection 233(2), above, paradoxically exempts accident benefits claimants from the general rule.

Within the SABS regulation a modified version of the false statement rule is applied. Section 53 of the SABS 2010 states that an insurer may terminate **the payment of benefits to or on behalf of an insured person if the insured person has wilfully misrepresented material facts with respect to the application for the benefit but not to any other aspects of evidence provided.**

Recommendation

21. Repeal subsection 233 (2) and amend 233 (1) so that SABS claims and tort claims are subject to exactly the same rule that applies to other auto insurance claims.

IMPROVEMENTS TO THE TORT SYSTEM

Applications for compensation under tort in Ontario accounts for a significant part of the premiums of the system – equal to or greater than the first-party, no-fault system (see Table 4 above).

The inefficiency and cost of tort claims has a large impact on the cost of the system as a whole.

The FSCO Three Year Review states that:

"Between the 2004 to the 2013 accident years, [bodily injury] claims costs for private passenger vehicles increased from approximately $1.32 billion to $2.48 billion, an increase of approximately 88 [per cent]. This is mainly due to a significant increase in the frequency of these claims."[32] While at the same time the number injuries, especially major injuries, from motor vehicle collisions was falling rapidly (see Chart 2 above). The Pinnacle Study of bodily injury claims found that the majority (67 per cent) of claimants for serious and permanent impairment had suffered soft tissue injuries – sprains and strains – at the time of the accident.

Clearly something is happening in the bodily injury portion of the system that is not being driven by changes in the number or severity of injuries. As well, it seems that the generous benefits in the no-fault portion of the system are not having the effect of reducing the amounts awarded under tort claims, while the no-fault system has itself become fraught with legal disputes and delays.

The improvements to medical care described above should significantly improve the incidence of permanent impairments, particularly from soft tissue injuries. As well, timely and objective recommendations of care from independent examination centres should reduce disputes and improve care for accident victims. Nonetheless, a number of administrative inefficiencies and some unfairness to one party or the other has crept into the system. This has led to drawn-out negotiations and in the relatively few instances where the cases go to trial, there are long delays – up to two or three years, and considerable costs before a claimant gets to receive any benefits due to them.

The current process for tort claims follows procedures in the court system developed over many years for all kinds of claims, some of which are highly complex. Auto insurance tort claims, while numerous (about 15,000 to 17,000 a year) are relatively straightforward. The issues in dispute recur frequently and seldom involve complex issues of law.

Under the current system, the basic issue of parties exchanging relevant documents and information is highly inefficient. There is no prescribed set of documents that must be produced by each party. If one party refuses to offer certain documents, the other must make a motion to the court, often a lengthy process, to compel the party to produce the documents. There is no provision for an early examination of the plaintiff or expert witnesses, which might help resolve the case before it has to go to court. As a point of comparison, the dispute resolution system at the Licence Appeal Tribunal provides for an early "case conference" to resolve issues before the case proceeds.

In the tort system, examination for discovery under oath comes much later in the litigation process and does not permit the examination under oath of expert witnesses for either side. And there is no process to encourage parties to move the case along and avoid delay.

In terms of compensation under tort, measurement of the amount and nature of future care is an area that is particularly complex and hotly contested. The opinion of an objective independent examination centre should go a long way to helping the parties to a claim come to a fair resolution of this matter. As well, amounts awarded under the no-fault system are difficult to relate to the awards made under the tort system leading to the potential for double dipping by the claimant.

As it stands today, policyholders are paying for a tort system with very little transparency as to its costs and relative benefits. And accident victims – who pay a high price for legal representation – are walking away with a lot less compensation than they ought to get. Furthermore, the tort system excludes access to drivers who are at fault, (approximately 30 per cent of accident victims). The challenge is to find the right balance between the freedom and right to sue for damages and the time and cost involved. After all it is fundamentally this reason why the no fault accident benefit system was created in the first place.

Recommendations

22. The government should consider implementing ways to make the system for automobile accident tort claims more streamlined, particularly:

- **Creating a prescribed list of documents that must be produced.**
- **Allowing for earlier examination under oath for both claimants and expert witnesses.**
- **Providing for some form of case management that encourages cases to proceed with a minimum of delay.**

23. The regulator should monitor the awards and costs of the tort system to determine if changes need to be made to the no-fault system to avoid having to sue under tort and to recommend changes to the tort system if costs appear to outweigh benefits from a public policy point of view.

24. The independent examination centre's opinion as to the claimant's medical diagnosis and future care needs, should be given a zone of deference by the courts in tort cases. This means that the opinion of the independent examination centre should be taken as definitive unless there is compelling reason to doubt it.

25. There should be full deductibility of accident benefits awards from tort awards.

26. Contingency fees in tort cases should be made fully transparent to the client, including notification that fees can be appealed.

27. Claimants should be informed in writing, possibly on a final settlement schedule, of their right to appeal the fees charged by their lawyer.

28. Settlement cheques should be made payable jointly to the claimant and his or her lawyer to allow the claimant to fully understand and accept the disposition of the funds.

INNOVATION AND PRICE REGULATION

It is safe to say that in just a few years – perhaps as few as ten years - automobile insurance in Ontario will not be the same as it is today. In every part of the economy change and innovation is taking place. Traditional providers are being displaced and whole sectors of the economy are being disrupted by technology. The financial industry is no exception. Automobile insurance in Ontario, a multibillion dollar industry, is ripe for disruption.

Automobile insurance in Ontario will not be the same as it is today.

In order to adapt to consumer demands, it is more than likely that auto insurers will need to merge or cooperate with players in other industries such as car manufactures, technology companies or providers of home security systems who are attempting to gain primary control over the relationship with home owners through knowledge-based monitoring of their behaviour.

It is critical that the legal and regulatory framework for the industry be so organized as to allow rapid evolution to take place in at least a rational and secure way, while continuing to protect consumers. The current framework is singularly unsuited for this role because it is not structured to be flexible and able to adapt to change.

Let us imagine one plausible disruptive scenario. A major automobile manufacturer decides to sell their cars with insurance bundled in at $400 for three years or 30,000 kilometres, whichever comes sooner. The coverage is simple, $x for medical care geared to the loss of a limb or bodily function or damage to the brain or nervous system; repair of the automobile. Part of this scenario, lifetime insurance coverage for damage and repair to the car, has already been announced by Tesla for the Asian market and by Volkswagen in Europe. It is not a stretch to find that the coverage could be extended to health care and income loss for accident victims as car manufacturers seek to find new sources of income. How will the government react? Will it try to protect the existing industry by making such an offer illegal? How will they deal with consumers who demand they be allowed to purchase such a product? How will the SABS apply? This is not a dissimilar scenario than what is being faced by the hospitality industry and the taxi industry today. To react to consumer demand, governments will have to rethink the meaning of the health care safety net incorporated into the current auto insurance product and flexibility around how it
might be delivered, as large parts of the existing regulations would likely become obsolete. The long and cumbersome premium rate setting regime will be outdated or even useless. There will be far fewer disputes and costs.

While all of these are important questions that address how the system might evolve, the point is that the system needs to be geared to adapting to rapid change demanded by consumers. For example, to what extent do consumers really want or need the level of coverage the government has deemed necessary? Are there better ways of delivering value? At the present time, several of the key players are simply carrying on as if change will come gradually. That's a recipe for unwelcome disruption.

"A ... trend away from regulation of the pricing of automobile insurance."

— FSCO Mandate Review

The system of pricing approvals today is becoming quickly outdated, time consuming and expensive. It needs to be addressed. Basically, it is a cost plus margin-for-profit system. Insurance companies present their costs and are given a margin, until recently five per cent, above their costs to set their premium. Critics have pointed to this system as being unfair to consumers since it protects insurance company profits and subsidizes inefficient providers. There are some 100 insurance companies providing auto insurance in Ontario with about 20 companies accounting for the majority of market share. Because of the built-in inertia and complexity of the rate approval process, insurers' ability to respond to market changes and take advantage of opportunities for innovation and competitiveness is reduced.

Commenting on the current rate regulation regime in Ontario, the FSCO Mandate Review expert advisory panel made the following observation:

"[There is] an international trend away from regulation of the pricing of automobile insurance while consumers seek more personalized coverage options. Many jurisdictions, particularly throughout the United States and Europe, have moved away from the prior approval system that is used to regulate auto insurance rates in Ontario. We heard from one U.S. jurisdiction that it experienced auto insurance rate reductions for nearly 80 per cent of drivers following the introduction of a more flexible system."[33]

Recommendations

29. To the extent possible, the regulatory regime should be overhauled to encourage insurers to innovate and introduce new products even on a trial or experimental basis.

30. The government should undertake a comprehensive review of auto insurance pricing alternatives with a view to providing more competition in the marketplace.

Role of the Regulator

If Ontario's system of government legislation with private sector delivery has any chance of operating well, a new role for the insurance regulator must be constructed. As discussed earlier, individual insurance companies, much less 100 of them, are in no position to, nor should they devise rules governing the delivery of insurance and the general operation of the insurance marketplace. Further, the government of the day should not be tasked with directly addressing these issues because there are more pressing big-picture issues to be addressed. In the absence of a strong central guiding force to conduct these functions, disagreement, confrontation and dysfunction are bound to prevail.

A new role for the insurance regulator must be constructed.

The insurance regulator in this case must take on the rule-making authority normally granted to an administrative tribunal. That is, the regulator must be an independent office and must have the authority to make policies and regulations which are binding in the field of automobile insurance. The Regulator should be responsible for the efficient and effective functioning of the auto insurance marketplace. As long as the policies and regulations set by the regulator are in keeping with the letter and spirit of the legislation, the regulator's actions should not be challenged in court.

Fortunately, the FSCO Mandate Review also recommended independent regulatory powers for the new Financial Services Regulatory Authority (FSRA). The government has accepted this advice and the FSRA Act was passed in December which, in summary:

- Establishes FSRA as a Crown agency which brings with it specific accountability requirements such as annual reports, agency business plans, and risk assessments.
- Sets out the object of FSRA to regulate the regulated sectors and requires FSRA to work with the Minister to prepare to carry out that regulatory function.
- Establishes the foundation of the governance structure for the agency by enabling the government to appoint a Board, composed of at least three and no more than 11 directors, and to designate one director as Chair.
- Specifies that the Board will govern FSRA's affairs, including appointing a CEO and making bylaws.

- Helps facilitatethe start-up of the organization by providing for potential loans from the Minister of Finance if required and for assessments from the regulated sectors to finance the new regulator.

The key next step is the appointment of the initial Board to work with the Ministry of Finance on an implementation plan.

Of particular importance in the context of automobile insurance is that the regulator, in addition to its role of consumer protection, must have its responsibilities expanded to include or enhance the following:

- Establishment of programs of care for common injuries and establishment of a roster of qualified independent examination centres. This must be a central role of the regulator. The office will need to acquire staff with medical, health care and rehabilitation expertise to ensure that medical and market practices are constantly monitored and the effectiveness of programs of care and the quality of independent examinations are monitored and adjusted as needed. If this is not done on an ongoing basis the system risks deterioration and a return to the dysfunction it is currently experiencing.
- Establishment of a roster of independent examination centres and overseeing the operation of the centres to ensure that the advice given is objective, medically sound and reasonable in the circumstances.
- Proactive analysis and monitoring of the auto insurance marketplace with changes to policies and practices being proactively promulgated. This will require statistical, analytical, medical and policy expertise to reside with the regulator.
- Conduction of research, working alongside the government, into new and emerging health care challenges such as concussions, chronic pain and post-traumatic stress.
- Monitoring the business practices of insurance companies and providers. If a particular insurance company is exhibiting an unusual number of disputes going into the Dispute Resolution process, the regulator should have the power to audit that insurer with a view to determining if claim handling or management practices are contributing to an unusual level of consumer disagreement with decisions being rendered.
- Monitoring the accident benefit, tort and dispute resolution processes to ensure that they are operating efficiently and that lessons learned are continuously translated into policy changes and improvements to benefit consumers.

The regulator should be required to set objective targets for the insurance marketplace and to report at least annually, or as regularly as seen fit by Cabinet, to the Legislature on

performance versus the targets. The targets should be set in a Memorandum of Agreement between the regulator and the Minister of Finance and should, as an illustration, include targets and improvement plans in areas such as:

- Average number of days to restore accident victims to health.
- Level and trend of accident victims acquiring permanent impairments.
- Average number and percentage of claims going to dispute resolution.
- Trend and number of benefit claims compared with automobile accidents in the province.
- Comparison of premium rates vs. other provinces.
- Average settlement costs in the no-fault and tort portions of the system, and the amount of funds going directly to medical and other needs of claimant's vs. examination, legal and other overhead costs.

Recommendations

31. A new, independent regulator with its own board of directors for automobile insurance be established either as part of the new Financial Services Regulatory Authority or a new separate office specifically for auto insurance.

32. The Insurance Act and regulations should be amended to include only broad principles and entitlements for benefits. The regulator should be responsible for interpreting the legislation and, following appropriate consultation with stakeholders, creating policies, guidelines and rules that are enforceable and not subject to challenge in the courts as long as they are in keeping with the letter and spirit of the legislation.

33. The new regulator needs to be equipped with the staff and expertise to act as a central governor over the automobile insurance marketplace including the conduct of all the players and providers within that marketplace.

34. The new regulator should be required to set standards of performance for the marketplace and to be accountable to the government for meeting those targets.

Role of Insurance Companies

Insurers do carry a share of the blame for their reputation as being difficult to deal with. In a new system the role of insurance companies will also have to change. They must move from an approach of "closing a claim" to actually providing appropriate medical care and income support to injured parties. This after all is the fundamental intent of the legislation. During my inquiries I was surprised by how little effort, overall, the insurance companies were making to manage health care for their clients instead of managing costs. The argument they presented was that they were effectively precluded from directly helping their clients due to the presence of lawyers who acted as gatekeepers. However, a large part of their clients, more than half, did not come to the insurers with a lawyer in the first instance. I believe that insurers will need to change their mind set and approach to their clients.

Insurance companies will also have to change.

Insurance companies must stop seeking to close claims via a cash settlement, something that changes the focus from health care to cash. Injured persons should be able to return for additional care as needed in accordance with the terms of the insurance policy.

Insurance companies will have to equip themselves with staff who have an appropriate level of medical and rehabilitation expertise. Their front line staff must become "case managers" rather than "claims adjusters." They need to monitor the effectiveness of health care providers and give feedback to both providers and the regulator on issues or conditions which can improve care for injured persons or remove barriers to early and efficient care.

They will need to establish an internal appeals function and they will need to monitor the reasons and outcomes of appeals and improve their management of claims accordingly.

Following a goal that is aligned directly with the intent of the legislation and focusing on the client's needs rather than on costs will yield significant results both in the value delivered to customers as well as reducing costs.

They will also need to innovate and compete on service and cost which is a role that would ensure their continued relevance and value and which most of them would welcome. The leading insurers of auto insurance, collectively represent a deep and formidable pool of talent. In a marketplace structured to take advantage of this resource, and with the right attitude, both the insurers and consumers can derive tremendous value.

Recommendation

35. Insurance companies must change their role from managing costs to delivering care to their customers. They will need to change their claims management and related practices in the process. They will also need to innovate and compete on service and cost.

Appendix I

AUTO SECTOR GROUPS CONSULTED

Note: Consultation does not mean endorsement. The opinions expressed in this report are entirely my own, unless they have been clearly attributed to a third party.

CONSUMERS:

Fair Association of Victims for Accident Insurance Reform (FAIR)

GOVERNMENT:

Alberta Treasury Board

Brian Jarvis, Former VP – Insurance Corporation of British Columbia

Financial Services Commission of Ontario

Florence Holden – Financial Services Tribunal

Ministry of Finance

Ministry of Health and Long-Term Care

Société de l'assurance automobile du Québec

HEALTH CARE:

Dr. Pierre Côté – University of Ontario Institute of Technology

Ontario Neurotrauma Foundation

Ontario Physiotherapy Clinic Alliance

Ontario Psychological Association Auto Insurance Subcommittee

Ontario Rehab Alliance

INSURERS:

Aviva Canada

Canadian Association of Direct Relationship Insurers

Desjardins General Insurance Group

Insurance Bureau of Canada

Intact Insurance Company (Ontario and Alberta)

The Cooperators Group

TD General Insurance Company

Travelers Canada (Ontario and Hartford)

Workplace Safety and Insurance Board

LEGAL:

Justice Douglas Cunningham

Justice Warren Winkler

Lee Samis – Samis + Samis

Ontario Trial Lawyers Association

MISCELLANOUS:

Ben Kosic – CANATICS

Holly Bakke, former New Jersey Commissioner – Department of Banking and Insurance

George Cooke – Martello Associates Consulting

Rob Sampson

Willie Handler – Willie Handler and Associates

Appendix II

CATASTROPHIC IMPAIRMENT – ONTARIO REGULATION 34/10: STATUTORY ACCIDENT BENEFITS SCHEDULE – EFFECTIVE SEPTEMBER 1, 2010

Catastrophic impairment

3.1 (1) For the purposes of this Regulation, an impairment is a catastrophic impairment if an insured person sustains the impairment in an accident that occurs on or after June 1, 2016 and the impairment results in any of the following:

1. Paraplegia or tetraplegia that meets the following criteria:

   i. The insured person's neurological recovery is such that the person's permanent grade on the ASIA Impairment Scale, as published in Marino, R.J. et al., *International Standards for Neurological Classification of Spinal Cord Injury*, Journal of Spinal Cord Medicine, Volume 26, Supplement 1, Spring 2003, can be determined.

   ii. The insured person's permanent grade on the ASIA Impairment Scale is or will be,

   A. A, B or C, or

   B. D, and

      1. the insured person's score on the Spinal Cord Independence Measure, Version III, item 12 (Mobility Indoors), as published in Catz, A., Itzkovich, M., Tesio L. et al, *A multicentre international study on the Spinal Cord Independence Measure, version III: Rasch psychometric validation*, Spinal Cord (2007) 45, 275-291 and applied over a distance of up to 10 metres on an even indoor surface is 0 to 5,

      2. the insured person requires urological surgical diversion, an implanted device, or intermittent or constant catheterization in order to manage a residual neuro-urological impairment, or

      3. the insured person has impaired voluntary control over anorectal function that requires a bowel routine, a surgical diversion or an implanted device.

2. Severe impairment of ambulatory mobility or use of an arm, or amputation that meets one of the following criteria:

i. Trans-tibial or higher amputation of a leg.

ii. Amputation of an arm or another impairment causing the total and permanent loss of use of an arm.

iii. Severe and permanent alteration of prior structure and function involving one or both legs as a result of which the insured person's score on the Spinal Cord Independence Measure, Version III, item 12 (Mobility Indoors), as published in Catz, A., Itzkovich, M., Tesio L. et al, *A multicentre international study on the Spinal Cord Independence Measure, version III: Rasch psychometric validation*, Spinal Cord (2007) 45, 275-291 and applied over a distance of up to 10 metres on an even indoor surface is 0 to 5.

3. Loss of vision of both eyes that meets the following criteria:

i. Even with the use of corrective lenses or medication,

A. visual acuity in both eyes is 20/200 (6/60) or less as measured by the Snellen Chart or an equivalent chart, or

B. the greatest diameter of the field of vision in both eyes is 20 degrees or less.

ii. The loss of vision is not attributable to non-organic causes.

4. If the insured person was 18 years of age or older at the time of the accident, a traumatic brain injury that meets the following criteria:

i. The injury shows positive findings on a computerized axial tomography scan, a magnetic resonance imaging or any other medically recognized brain diagnostic technology indicating intracranial pathology that is a result of the accident, including, but not limited to, intracranial contusions or haemorrhages, diffuse axonal injury, cerebral edema, midline shift or pneumocephaly.

ii. When assessed in accordance with Wilson, J., Pettigrew, L. and Teasdale, G., Structured Interviews for the Glasgow Outcome Scale and the Extended Glasgow Outcome Scale: Guidelines for Their Use, Journal of Neurotrauma, Volume 15, Number 8, 1998, the injury results in a rating of,

A. Vegetative State (VS or VS*), one month or more after the accident,

B. Upper Severe Disability (Upper SD or Upper SD*) or Lower Severe Disability (Lower SD or Lower SD*), six months or more after the accident, or

C. Lower Moderate Disability (Lower MD or Lower MD*), one year or more after the accident.

5. If the insured person was under 18 years of age at the time of the accident, a traumatic brain injury that meets one of the following criteria:

i. The insured person is accepted for admission, on an in-patient basis, to a public hospital named in a Guideline with positive findings on a computerized axial tomography scan, a magnetic resonance imaging or any other medically recognized brain diagnostic technology indicating intracranial pathology that is a result of the accident, including, but not limited to, intracranial contusions or haemorrhages, diffuse axonal injury, cerebral edema, midline shift or pneumocephaly.

ii. The insured person is accepted for admission, on an in-patient basis, to a program of neurological rehabilitation in a paediatric rehabilitation facility that is a member of the Ontario Association of Children's Rehabilitation Services.

iii. One month or more after the accident, the insured person's level of neurological function does not exceed category 2 (Vegetative) on the King's Outcome Scale for Childhood Head Injury as published in Crouchman, M. et al, *A practical outcome scale for paediatric head injury*, Archives of Disease in Childhood, 2001: 84: 120-124.

iv. Six months or more after the accident, the insured person's level of neurological function does not exceed category 3 (Severe disability) on the King's Outcome Scale for Childhood Head Injury as published in Crouchman, M. et al, *A practical outcome scale for paediatric head injury*, Archives of Disease in Childhood, 2001: 84: 120-124.

v. Nine months or more after the accident, the insured person's level of function remains seriously impaired such that the insured person is not age-appropriately independent and requires in-person supervision or assistance for physical, cognitive or behavioural impairments for the majority of the insured person's waking day.

6. Subject to subsections (2) and (5), a physical impairment or combination of physical impairments that, in accordance with the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993, results in 55 per cent or more physical impairment of the whole person.

7. Subject to subsections (2) and (5) a mental or behavioural impairment, excluding traumatic brain injury, determined in accordance with the rating methodology in Chapter 14, Section 14.6 of the American Medical Association's Guides to the Evaluation of Permanent Impairment, 6th edition, 2008, that, when the impairment score is combined with a physical impairment described in paragraph 6 in accordance with the combining requirements set out in the Combined Values Table of the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993, results in 55 percent or more impairment of the whole person.

8. Subject to subsections (3) and (5), an impairment that, in accordance with the American Medical Association's Guides to the Evaluation of Permanent Impairment, 4th edition, 1993 results in a class 4 impairment (marked impairment) in three or more areas of function that precludes useful functioning or a class 5 impairment (extreme impairment) in one or more areas of function that precludes useful functioning, due to mental or behavioural disorder. O. Reg. 251/15, s. 3; O. Reg. 116/16, s. 1.

(2) Paragraphs 6 and 7 of subsection (1) do not apply in respect of an insured person who sustains an impairment as a result of an accident unless,

(a) two years have elapsed since the accident; or

(b) an assessment conducted by a physician three months or more after the accident determines that,

(i) the insured person has a physical impairment or combination of physical impairments determined in accordance with paragraph 6 of subsection (1), or a combination of a mental or behavioural impairment and a physical impairment determined in accordance with paragraph 7 of subsection (1) that results in 55 per cent or more impairment of the whole person, and

(ii) the insured person's condition is unlikely to improve to less than 55 per cent impairment of the whole person. O. Reg. 251/15, s. 3.

(3) Paragraph 8 of subsection (1) does not apply in respect of an insured person who sustains an impairment as a result of the accident unless,

(a) two years have elapsed since the accident; or

(b) a physician states in writing that the insured person's impairment is unlikely to improve to less than a class 4 impairment (marked impairment) in three or more areas of function that precludes useful functioning, due to mental or behavioural disorder. O. Reg. 251/15, s. 3.

(4) Subsection (5) applies to an insured person who was under the age of 18 at the time of the accident and whose impairment is not a catastrophic impairment within the meaning of subsection (1). O. Reg. 251/15, s. 3.

(5) If the insured person's impairment can reasonably be believed to be a catastrophic impairment for the purposes of paragraph 6, 7 or 8 of subsection (1), the impairment shall be deemed to be the impairment referred to in paragraph 6, 7 or 8 of subsection (1) that is most analogous to the impairment, after taking into consideration the developmental implications of the impairment. O. Reg. 251/15, s. 3.

Appendix III

EXAMINATION CLAIMS EXPERIENCE (PRIVATE PASSENGER VEHICLES) BY ACCIDENT YEAR

	2004	2009	2010	2012	2013
Number of examination claims	36,448	47,375	48,970	31,070	36,127
Number of claims per 100 insured vehicles	0.615	0.73	0.746	0.459	0.527
Accident benefits earned vehicles	5,926,718	6,492,051	6,563,999	6,774,926	6,856,005
Average cost of examinations per insured vehicle	$41.94	$130.34	$129.05	$41.74	$50.60
Total examination costs	$248.6 million	$846.2 million	$847.1 million	$282.8 million	$346.9 million
Total accident benefits claims costs	$1.60 billion	$3.81 billion	$3.78 billion	$1.92 billion	$2.15 billion

Source: 2013 General Insurance Statistical Agency exhibits for private passenger vehicles.

Appendix IV

INCOME REPLACEMENT BENEFITS – ONTARIO REGULATION 34/10: STATUTORY ACCIDENT BENEFITS SCHEDULE – EFFECTIVE SEPTEMBER 1, 2010

Income Replacement Benefits

Interpretation

4. (1) In this Part,

"gross employment income" means salary, wages and other remuneration from employment, including fees and other remuneration for holding office, and any benefits received under the *Employment Insurance Act* (Canada), but excludes any retiring allowance within the meaning of the *Income Tax Act* (Canada) and severance pay that may be received; ("revenu brut d'emploi")

"gross weekly employment income" means, in respect of an insured person, the amount of the person's gross annual employment income, as determined under subsection (2), divided by 52; ("revenu brut hebdomadaire d'emploi")

"other income replacement assistance" means, in respect of an insured person who sustains an impairment as a result of an accident,

(a) the amount of any gross weekly payment for loss of income that is received by or available to the person as a result of the accident under the laws of any jurisdiction or under any income continuation benefit plan, other than,

(i) a benefit under the *Employment Insurance Act* (Canada),

(ii) a payment under a sick leave plan that is available to the person but is not being received, and

(iii) a payment under a workers' compensation law or plan that is not being received by the person because the person has elected under the workers' compensation law or plan to bring an action and is not entitled to the payment, and

(b) the amount of any gross weekly payment for loss of income, other than a benefit or payment described in subclauses (a) (i) to (iii) that may be available to the person as a result of the accident under the laws of any jurisdiction or under any income continuation benefit plan but is not being received by the person and for which the person has not made an application. ("autre assistance au titre du remplacement du revenu") O. Reg. 34/10, s. 4 (1).

(2) The gross annual employment income of an insured person is determined as follows:

1. In the case of a person referred to in subparagraph 1 i of subsection 5 (1) who was not a self-employed person at any time during the four weeks before the accident, the person's gross annual employment income is whichever of the following amounts the person designates:

i. The person's gross employment income for the four weeks before the accident, multiplied by 13.

ii. The person's gross employment income for the 52 weeks before the accident.

2. Subject to paragraph 3, the person's gross annual employment income is his or her gross employment income for the 52 weeks before the accident if,

i. the person qualifies for a benefit under subparagraph 1 i of subsection 5 (1) and was a self-employed person at any time during the four weeks before the accident, or

ii. the person qualifies for a benefit under subparagraph 1 ii of subsection 5 (1).

3. If the person described in subparagraph 2 i was self-employed for at least one year before the accident, the person may designate as his or her gross annual employment income the amount of his or her gross employment income during the last fiscal year of the business that ended on or before the day of the accident. O. Reg. 34/10, s. 4 (2); O. Reg. 370/10, s. 1.

(3) A self-employed person's weekly income or loss from self-employment at the time of the accident is the amount that would be 1/52 of the amount of the person's income or loss from the business for the last completed taxation year as determined in accordance with Part I of the *Income Tax Act* (Canada). O. Reg. 34/10, s. 4 (3).

(4) A self-employed person's loss from self-employment after an accident is determined in the same manner as losses from the business in which the person was self-employed would be determined under subsection 9 (2) of the *Income Tax Act* (Canada) without making any deductions for,

(a) any expenses that were not reasonable or necessary to prevent a loss of revenue;

(b) any salary expenses paid to replace the self-employed person's active participation in the business, except to the extent that the expenses are reasonable in the circumstances; and

(c) any non-salary expenses that are different in nature or greater than the non-salary expenses incurred before the accident, except to the extent that those expenses are reasonable in the circumstances and necessary to prevent or reduce any losses resulting from the accident. O. Reg. 34/10, s. 4 (4).

(5) If, under the *Income Tax Act* (Canada) or legislation of another jurisdiction that imposes a tax calculated by reference to income, a person is required to report the amount of his or her income, the person's income before an accident shall be determined for the purposes of this Part without reference to any income the person has failed to report contrary to that Act or legislation. O. Reg. 34/10, s. 4 (5).

(6) The amount of a person's gross annual employment income and the amount of the person's income or loss from self-employment may be adjusted for the purposes of this Part to reflect any subsequent change in the amount determined by the Canada Revenue Agency under the *Income Tax Act* (Canada) or by the relevant government or agency under the legislation of another jurisdiction that imposes a tax calculated by reference to income. O. Reg. 34/10, s. 4 (6).

Eligibility criteria

5. (1) The insurer shall pay an income replacement benefit to an insured person who sustains an impairment as a result of an accident if the insured person satisfies one or both of the following conditions:

1. The insured person,

i. was employed at the time of the accident and, as a result of and within 104 weeks after the accident, suffers a substantial inability to perform the essential tasks of that employment, or

ii. was not employed at the time of the accident but,

A. was employed for at least 26 weeks during the 52 weeks before the accident or was receiving benefits under the *Employment Insurance Act* (Canada) at the time of the accident,

B. was at least 16 years old or was excused from attending school under the *Education Act* at the time of the accident, and

C. as a result of and within 104 weeks after the accident, suffers a substantial inability to perform the essential tasks of the employment in which the insured person spent the most time during the 52 weeks before the accident.

2. The insured person,

i. was a self-employed person at the time of the accident, and

ii. suffers, as a result of and within 104 weeks after the accident, a substantial inability to perform the essential tasks of his or her self-employment. O. Reg. 34/10, s. 5 (1).

(2) Despite subsection (1), an insured person is not eligible to receive income replacement benefits if he or she is eligible to receive and has elected under section 35 to receive either a non-earner benefit or a caregiver benefit under this Part. O. Reg. 34/10, s. 5 (2).

Period of benefit

6. (1) Subject to subsection (2), an income replacement benefit is payable for the period in which the insured person suffers a substantial inability to perform the essential tasks of his or her employment or self-employment. O. Reg. 34/10, s. 6 (1).

(2) The insurer is not required to pay an income replacement benefit,

(a) for the first week of the disability; or

(b) after the first 104 weeks of disability, unless, as a result of the accident, the insured person is suffering a complete inability to engage in any employment or self-employment for which he or she is reasonably suited by education, training or experience. O. Reg. 34/10, s. 6 (2).

Amount of weekly income replacement benefit

7. (1) The weekly amount of an income replacement benefit payable to an insured person who becomes entitled to the benefit before his or her 65th birthday is the lesser of "A" and "B" where,

"A" is the weekly base amount determined under subsection (2) less the total of all other income replacement assistance, if any, for the particular week the benefit is payable, and

"B" is $400 or, if an optional income replacement benefit referred to in section 28 has been purchased and applies to the person, the amount fixed by the optional benefit. O. Reg. 34/10, s. 7 (1).

(2) For the purposes of subsection (1), the weekly base amount in respect of an insured person is determined as follows:

1. Determine whichever of the following amounts is applicable:

i. 70 per cent of the amount, if any, by which the sum of the insured person's gross weekly employment income and weekly income from self-employment exceeds the amount of the insured person's weekly loss from self-employment, if the weekly income replacement benefit is for one of the first 104 weeks of disability, or

ii. the greater of the amount determined for the purposes of subparagraph i and $185, if the weekly income replacement benefit is for a week for which the person is entitled to receive an income replacement benefit after the first 104 weeks of disability.

2. To the amount determined under paragraph 1, add 70 per cent of the amount of the insured person's weekly loss from self-employment that he or she incurs as a result of the accident. O. Reg. 34/10, s. 7 (2).

(3) The insurer may deduct from the amount of an income replacement benefit payable to an insured person,

(a) 70 per cent of any gross employment income received by the insured person as a result of being employed after the accident and during the period in which he or she is eligible to receive an income replacement benefit; and

(b) 70 per cent of any income from self-employment earned by the insured person after the accident and during the period in which he or she is eligible to receive an income replacement benefit. O. Reg. 34/10, s. 7 (3).

(4) The insurer shall pay an expense incurred by or on behalf of an insured person for the preparation of a report for the purpose of calculating the person's income from employment or self-employment if all of the following conditions are satisfied:

1. The insured person is applying for an income replacement benefit under this Part that is based on the employment or self-employment considered in the report.

2. The report is prepared by a member of a designated body within the meaning of the *Public Accounting Act, 2004*.

3. The expense is reasonable and necessary for the purpose of determining the insured person's entitlement to an income replacement benefit. O. Reg. 34/10, s. 7 (4); O. Reg. 289/10, s. 2.

(5) The insurer is not required to pay more than a total of $2,500 for the preparation of one or more reports under subsection (4) in respect of an insured person. O. Reg. 34/10, s. 7 (5).

Adjustment after age 65

8. (1) If a person is receiving an income replacement benefit immediately before his or her 65th birthday, the weekly amount of the benefit is adjusted, on the later of the day of the person's 65th birthday and the second anniversary of the day the person began receiving the benefit, to the amount determined in accordance with the following formula:

$$C \times 0.02 \times D$$

in which,

"C" is the weekly amount of the income replacement benefit that the person was entitled to receive immediately before the adjustment, before any deductions permitted by subsection 7 (3),

"D" is the lesser of,

(a) 35, and

(b) the number of years during which the person qualified for the income replacement benefit before the adjustment is made.

O. Reg. 34/10, s. 8 (1).

(2) Despite section 6, an income replacement benefit that has been adjusted under subsection (1) is payable, without any deductions under clause 7 (3) (a) or (b), until the person dies. O. Reg. 34/10, s. 8 (2).

If entitlement first arises on or after 65th birthday

9. (1) If an insured person becomes entitled to receive an income replacement benefit on or after his or her 65th birthday,

(a) subject to clause 6 (2) (a) and despite clause 6 (2) (b), the insured person is entitled to an income replacement benefit for not more than 208 weeks after becoming entitled to the benefit; and

(b) the weekly amount of the benefit is the weekly amount of the income replacement benefit otherwise determined under section 7 before any deductions permitted by subsection 7 (3), multiplied by the factor set out in Column 2 of the Table to this subsection opposite the number of weeks that have elapsed since the person became entitled to receive the benefit.

TABLE

Column 1 Number of weeks since Entitlement Arose	Column 2 Factor
Less than 52 weeks	1.0
52 weeks or more but less than 104 weeks	0.8
104 weeks or more but less than 156 weeks	0.6
156 weeks or more but less than 208 weeks	0.3

O. Reg. 34/10, s. 9 (1).

(2) No deduction may be made under clause 7 (3) (a) or (b) from an income replacement benefit determined under subsection (1). O. Reg. 34/10, s. 9 (2).

No violation of *Human Rights Code*

10. The age distinctions in sections 8 and 9 apply despite the *Human Rights Code*. O. Reg. 34/10, s. 10.

Temporary return to employment

11. A person receiving an income replacement benefit may return to or start employment or self-employment at any time during the first 104 weeks for which he or she is receiving the benefit without affecting his or her entitlement to resume receiving any benefits to which he or she is entitled under this Part if, as a result of the accident, he or she is unable to continue the employment or self-employment. O. Reg. 34/10, s. 11.

Appendix V

GENERAL INSURANCE STATISTICAL AGENCY – PRIVATE PASSENGER VEHICLES ACCIDENT BENEFITS CLAIMS FOR MEDICAL AND REHABILITATION – 2013

Breakdown of costs between Medical Care and Other

	Medical Care	Other	Medical Care %**	Other %
Medical	$898,987,620		50%	
Visitation		$4,976,449		0.28%
Dependant Care		$38,751		0%
Housekeeping		$34,685,455		2%
Examination		$335,134,533		19%
Rehab - other than renovation	$89,186,509		5%	
Renovation Rehab	$33,772,102		2%	
Attendant Care	$381,312,138		21%	
Replacement etc.*	$3,514,809		0%	
All Med/Rehab	$1,406,773,177	$374,835,188	79%	21%

Total Med/Rehab Expenditure $1,781,608,366

** Replacement of clothing, hearing aids, glasses and other devices*

*** Percentage are over total med/rehab amount*

Notes:

- This segregation of amounts is based on the definitions of the accident benefits coverages.
- When settlements are paid, insurers allocate the amounts to one of the coverages above.

- To determine how much of any of these payments go to the actual purpose it is meant for is not possible given the information available.
- The allocation of an expenditure category to "Other" does not necessarily imply that the expenditure does not contribute to the well being of the individual in medical terms. For example visitation costs for relatives to visit the injured are not direct medical expenditures, however may contribute to their emotional well being.

Appendix VI

INFORMATION SUPPLIED BY THE FINANCIAL SERVICES COMMISSION OF ONTARIO

Dispute resolution services – mediation and arbitration from 2011/12 to 2015/16

	Mediation	Arbitration
A. Total applications less admin closures	115,908	
B. Full and partial Settlements	54,790	
Total value of full and partial settlements	$777,400,000	
Annual average	$17,143	
C. Settlements with zero value	(9,523)	
D. Move to arbitration		44,599
E. Offline[34]		25,701[35]
F. Failed Settlements		61,118
G. Total	115,908	

Conclusions

A. Average number of claims going to mediation	23,200
B. Average annual settled at mediation with value >$0	((B-C)/A); 39%
a. Average annual value	$155,500,000
b. Annual average value of settlement	$17,143
C. Settlements with zero value (annual average / %)	2,000; (C/A) 8.2%
D. Moved to arbitration (annual average / %)	9,000; (D/A) 38%
E. Moved off line (annual average / %)	5,140; (E/A) 22%

Over a five-year period (2011-2015), the average number of applications going into mediation at FSCO annually was 23,200 (or about 35 per cent of total claims).

Declined amounts as a % of proposed amounts – OCF18[36]

	Proposed Amounts*	Declined Amounts**	Declined for Reason: Not Reasonable or Necessary	Percentage Declined
2011H1	$331,346,422	$147,703,454	$38,236,804	45%
2011H2	$321,560,134	$120,913,044	$31,386,306	38%
2012H1	$259,966,717	$91,108,386	$25,784,396	35%
2012H2	$295,848,707	$95,396,549	$28,035,888	32%
2013H1	$264,960,375	$81,626,632	$22,915,597	31%
2013H2	$317,989,691	$97,928,001	$29,145,141	31%
2014H1	$257,335,801	$73,690,588	$20,959,038	29%
2014H2	$269,959,037	$70,281,773	$18,039,737	26%
2015H1	$212,584,457	$52,652,108	$14,193,819	25%
2015H2	$185,646,061	$42,058,878	$10,173,917	23%
2016H1	$53,299,204	$13,185,308	$2,093,520	25%

Source: HCAI

Note: Later year data is still developing.

** Proposed Amounts: Sum total of all amounts proposed for treatment.*

*** Declined Amounts are for the following reasons:*

- *Diagnosis indicates that MIG is appropriate*
- *Diagnosis Is Inconsistent With The Provider Type*
- *Procedure is Inconsistent with the Diagnosis*
- *Diagnosis Is Inconsistent With The Cause of Loss*
- *Not Reasonable and Necessary*
- *Service/Product Is Inconsistent With The Cause of Loss*
- *Fee Exceeds Reasonable Fees for Product or Service*
- *Fee Exceeds Maximum Allowed*
- *Service/Procedure Time Adjustment*
- *Policy Coverage Limits Exceeded*
- *Good or service not covered*
- *There is a conflict of interest*
- *Other please provide an explanation*

Endnotes

[1] Meckbach, Greg, Canadian Underwriter, "'Lots of room for improvement' with new Ontario auto dispute resolution system: Judge Cunningham," http://www.canadianunderwriter.ca/insurance/lots-room-improvement-new-ontario-auto-dispute-resolution-system-judge-cunningham-1004102925/, November 2, 2016.

[2] Sources of data for Figure 1 (The cited General Insurance Statistical Agency data represents only transactions related to private passenger vehicles.):

a – Preliminary 2014 Ontario Road Safety Annual Report Selected Statistics, Ministry of Transportation.

b – Ontario Road Safety Annual Report 2013, Ministry of Transportation.

c – 2013 accident year, 2015 General Insurance Statistical Agency (GISA) loss ratio exhibit for private passenger vehicles. Accident benefits claims is estimated based on GISA actuarial calculations.

d – 2013 FSCO dispute resolution system data.

e – 2013 accident year data from FSCO DRS group.

f – 2013 accident year, 2015 GISA loss ratio exhibit for private passenger vehicles. Number is estimated based on GISA actuarial calculations.

g – 2013 accident year data from Ontario Health Claims Database (HCDB), September 2016 report. Please note that the assessments include both insurer initiated as well as provider initiated. A claimant could have both, however are counted once. Also note that provider initiated assessments may include a count for assessments that are offered as part of treatment.

h – 2013 annual average based on business information reported to Health Claims for Auto Insurance (HCAI).

i – Registered Insurance Brokers of Ontario, as of August 2014; not specific to Auto Insurance.

[3] Ontario Road Safety Annual Report – 2013

[4] FSCO Three Year Review, December 2014, Chart 9, p. 41, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf

[5] O. Reg. 34/10, s. 16 (1).

[6] Drs. Côté P., et al., Early and Aggressive Care and Delayed Recovery From Whiplash, June 15, 2007, p. 861.

[7] Cassidy, J. David et al., "Effect of Eliminating Compensation for Pain and Suffering on the outcome of Insurance Claims for Whiplash Injuries," The New England Journal of Medicine, Volume 342, Number 16, April 20, 2000, p. 1184

[8] Association of Workers' Compensation Boards of Canada Key Statistical Measures Data, 2015 http://awcbc.org/?page_id=9759&_sm_au_=iVV5R7SWWnFtj1RP

[9] Drs. Côté P., Hogg-Johnson S., Cassidy JD., Carroll L., Frank JW. in their study *Initial Patterns of Clinical Care and Recovery from Whiplash Injuries: A Population-Based Cohort Study, p. 2261.*
[10] *Automobile Insurance Third Party Liability Bodily Injury Closed Claim Study in Ontario* conducted by Pinnacle Actuarial Resources, Inc (Pinnacle Study), August 13, 2014, p. 4, https://www.fsco.gov.on.ca/en/auto/Documents/abbreviated-report.pdf
[11] FSCO Three Year Review, December 2014, Table 5, p. 40, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf
[12] Association of Workers' Compensation Boards of Canada Key Statistical Measures Data, 2015, http://awcbc.org/?page_id=9759&_sm_au_=iVV5R7SWWnFtj1RP
[13] Ontario Workplace Safety and Insurance Board, 2015 Economic Statement, available at www.wsib.on.ca
[14] Meckbach, Greg, Canadian Underwriter, "'Lots of room for improvement' with new Ontario auto dispute resolution system: Judge Cunningham," http://www.canadianunderwriter.ca/insurance/lots-room-improvement-new-ontario-auto-dispute-resolution-system-judge-cunningham-1004102925/, November 2, 2016.
[15] GISA Examination Claims Experience. See Appendix III.
[16] By the Numbers, Ontario Workplace Safety and Insurance Board Health Care Benefit Payments by Service Categories by Payment Year www.wsib.on.ca
[17] Cunningham, the Honourable J. Douglas, *Ontario Automobile Insurance Dispute Resolution System Review Final Report* (Cunningham Final Report), p. 6
[18] Insurance Corporation of British Columbia's financial statement
[19] Justice Cunnigham's Interim Report, p. 13
[20] Spine Journal, "Does Early Management of Whiplash-Associated Disorders Assist or Impede Recovery?", Drs. Côté P. and Soklaridis S., p. S276
[21] Porter, Michael E. and Lee, Thomas H., "The Strategy That Will Fix Health Care," Havard Business Review, October 2013.
[22] Ibid.
[23] Ontario Auto Insurance Anti-Fraud Task Force Final Report, p. 28
[24] By the Numbers, Ontario Workplace Safety and Insurance Board Health Care Benefit Payments by Service Categories by Payment Year www.wsib.on.ca
[25] Justice Cunnigham's Interim Report, p. 31
[26] Cassidy, J. David et al., "Effect of Eliminating Compensation for Pain and Suffering on the outcome of Insurance Claims for Whiplash Injuries," The New England Journal of Medicine, Volume 342, Number 16, April 20, 2000, p. 1184
[27] Justice Cunnigham's Interim Report, p. 26
[28] Justice Cunnigham's Final Report, p. 5
[29] Justice Cunnigham's Final Report, p. 23
[30] Ontario Automobile Insurance Dispute Resolution System Review Final Report, p. 14
[31] Ontario Auto Insurance Anti-Fraud Task Force Final Report, p. 19
[32] FSCO Three Year Review, December 2014, p. 40, http://www.fsco.gov.on.ca/en/auto/3yr-review/Documents/aoda-3yr-review.pdf
[33] Review of the Mandates of the Financial Services Commission of Ontario, Financial Services Tribunal, and the Deposit Insurance Corporation of Ontario, p. 80
[34] It is unclear how these cases settled, or whether they were settled. Data not available.
[35] The cases that FSCO has no information on how they finally settle, as information is not provided to FSCO, are: 115,908 – 45,608 (Full Settlements) – 44,599 (Proceed to Arbitration) = 25,701.
[36] An OCF 18 is used to make the following claims:

- Ambulance or other goods or services provided on an emergency basis
- Drugs prescribed by a regulated health professional
- Goods with a cost of $250 or less per item
- Dental goods or services

Financial Reporting Through the Lens of a Property/Casualty Actuary

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FOREWORD

EY was retained by the Casualty Actuarial Society (CAS) to write a new text on financial reporting and taxation as it affects reserving and statutory reporting for use in the CAS basic education process. The CAS had two key objectives for this text:

1. Replace a number of readings that existed on the CAS *Syllabus of Basic Education* as of 2011 with a single educational publication.
2. Refine the content of the syllabus material to focus on financial accounting and taxation topics that are of particular relevance to the property/casualty actuary.

The CAS specified that the new text would focus on the learning objectives contained within the syllabus as of 2011.

This publication has been prepared from an actuary's lens, highlighting those areas of financial reporting and taxation deemed to be relevant by the CAS Syllabus Committee and the authors of this text. The learning objectives contained within the 2011 syllabus provided the underlying direction of the content contained herein. The Exam 6 learning objectives and examination material may change over time, and thus, the content of this publication may need to be updated.

This text does not represent the position of EY or the authors with respect to interpretations of accounting or tax guidance. Nor is this text intended to be a substitute for authoritative accounting guidance issued by the National Association of Insurance Commissioners (NAIC), American Institute of Certified Public Accountants (AICPA), Financial Accounting Standards Board (FASB), Governmental Accounting Standards Board (GASB), Securities and Exchange Commission (SEC), Internal Revenue Service (IRS), Canadian Institute of Chartered Accountants (CICA), or any other regulatory body. Authoritative guidance from regulatory bodies trumps the writings contained herein. Furthermore, accounting standards are continuously evolving. As a result, readers of this text should be aware that the accounting standards referenced in this publication may have changed since the time of writing. The CAS may request that this publication be updated to reflect such changes.

While the authors of this publication have taken reasonable measures to verify references, content and calculations, it is possible that we may have inadvertently missed something. We would appreciate being informed of any inaccuracies so an errata sheet(s) may be issued and/or future editions of this publication may be corrected.

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PART I. INTRODUCTION

CHAPTER 1. FINANCIAL REPORTING IN THE PROPERTY/CASUALTY INSURANCE INDUSTRY

IMPORTANCE AND OBJECTIVES OF FINANCIAL REPORTING

Financial reporting serves as a means to communicate a company's financial results and health. Financial reporting is accomplished through a series of financial statements that consolidate a company's transactions and events into a summarized form under specified accounting rules. The purpose of these rules is to provide companies with a framework for measuring and recording transactions and the related revenue, expenses, assets and liabilities on a consistent basis.

Financial reports enable stakeholders and regulators to track financial performance, compare a company's performance to others and make informed financial decisions under a set of common rules. The stakeholders of an insurance company include policyholders, claimants, investors, directors of the board and company management. The regulators primarily include state governmental authorities, as we shall see below.

OVERVIEW OF THE BASES OF FINANCIAL REPORTING (STATUTORY, GAAP, IFRS, TAX, CANADIAN) AND DIFFERENCES IN TERMS OF USE

The accounting standards that govern financial reporting for insurance companies are numerous and complex. As we write this publication these standards are evolving, and this evolution is resulting in much debate among industry participants. Regardless, the intent of accounting standards is to promote a consistent framework for reporting insurance company transactions such that comparisons of financial performance and health of insurance companies can be made within the industry.

In the U.S., insurance companies are regulated by the individual state governments within which they are licensed to transact business. Within each state government there is an insurance division led by an insurance commissioner, director, superintendent or administrator (commissioner). The National Association of Insurance Commissioners (NAIC) serves as an organization of state regulators that facilitates and coordinates governance across the U.S. The NAIC itself is not a regulator; regulatory authority remains with the individual states. Therefore, model laws and regulations established by the NAIC are not law; individual states have the authority to decide whether to adopt NAIC model laws and regulations.

Statutory Accounting Principles (SAP) is a framework of "accounting principles or practices prescribed or permitted by an insurer's domiciliary state."[1] Most insurance companies are licensed to transact business in more than one state. Having to follow the accounting rules and regulations of each state in which the company is licensed can be cumbersome and result in inconsistent reporting practices. To minimize the varying complexities of different rules and facilitate commonality in reporting practices, the NAIC adopted Codification of SAP effective January 1, 2001. Codification does not prevent individual state regulation but rather provides a common set of principles that individual states can follow to ease the regulatory burden on companies and promote consistency.

Statements of Statutory Accounting Principles (SSAPs) are published by the NAIC in its *Accounting Practices and Procedures Manual*. The manual includes more than 100 SSAPs, which serve as the basis for preparing and issuing statutory financial statements for insurance companies in the U.S. in accordance with, or in the absence of, specific statutes or regulations promulgated by individual states.

From a financial reporting perspective, regulatory oversight by state governments focuses on insurance company solvency to ensure that policyholders receive the protection they are entitled to and claimants receive the applicable compensation for damages incurred. SAP and associated monitoring tools are intended to provide regulators with early warning of deterioration in an insurance company's financial condition. SAP tends to be conservative in order to provide that early warning. For example, certain illiquid assets are not admitted (excluded from the balance sheet) under SAP, despite having economic value.

Generally Accepted Accounting Principles (GAAP) provides another set of common rules under which publicly traded insurance companies and privately held companies report their financial transactions and operating results. GAAP does have certain specialized rules for insurance companies, but unlike SAP, this framework is not built on the principle of conservatism. Rather, the primary focus of GAAP is the presentation of a company's financial results in a manner that more closely aligns with the company's financial performance during the period. Historically, this has been accomplished by matching revenues and expenses. For example, under GAAP, expenses incurred by an insurance company in conjunction with successful acquisition of business are deferred to match the earning of associated premium. In contrast, under SAP, all costs associated with policy acquisition are expensed at the time they are incurred by the insurance company.

The Securities and Exchange Commission (SEC) is the authoritative body for establishing accounting and reporting standards for publicly traded companies in the U.S., including publicly traded insurance companies. As highlighted on the SEC's website, "The mission of the U.S. Securities and Exchange Commission is to protect investors, maintain fair, orderly and

[1] NAIC, *Accounting Practices and Procedures Manual,* Vol I, March 2009, page P-2.

efficient markets, and facilitate capital formation."[2] The SEC has assigned the Financial Accounting Standards Board (FASB) with the responsibility of developing and establishing GAAP, with the SEC operating in an overall monitoring role. The FASB is the private organization providing authoritative accounting guidance for nongovernmental entities.

The Governmental Accounting Standards Board (GASB) is the private organization providing authoritative accounting guidance for the public sector. According to the GASB's website, the GASB "is the independent organization that establishes and improves standards of accounting and financial reporting for U.S. state and local governments … the official source of generally accepted accounting principles (GAAP) for state and local governments."[3] Although this publication does not discuss accounting for governmental entities, we note that the accounting for such entities differs from the accounting for insurance companies. Knowledge of the GASB as it relates to insurance-related activities of governmental entities is important for the property/casualty actuary who performs actuarial services for the public sector.

The Internal Revenue Service (IRS) is the U.S. government agency responsible for enforcing tax laws and collecting taxes. Every business paying taxes in the U.S. must compute taxable income based on the tax laws passed by Congress and the related regulations issued by the IRS. For insurance companies, the starting point for taxable income is income determined under SAP. SAP income is adjusted based on the provisions of the various tax laws and regulations. While SAP is generally conservative, tax-basis accounting may be more or less conservative depending on how political and other factors affect tax legislation. While some adjustments result in a decrease to taxable income (e.g., tax-exempt income), adjustments specific to the insurance industry tend to focus on the acceleration of income for tax purposes (e.g., the discounting of loss reserves and the reduction of unearned premiums).

The Canadian Institute of Chartered Accountants is the body in Canada that defines Canadian Generally Accepted Accounting Principles (CGAAP). At one time, SAP applied to the preparation of the Annual Return for Canadian-domiciled insurers. However, this is no longer the case, and the financial statements included in the Annual Return are prepared in accordance with CGAAP.

Under CGAAP, policy liabilities can be recorded in accordance with accepted actuarial practice in Canada, which means that the recorded liabilities are discounted to reflect the time value of money and include a provision for adverse deviation.

International Financial Reporting Standards (IFRS) provide an alternative accounting framework used by many countries outside the U.S. IFRS are established by the International

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[2] U.S. SEC, *The Investor's Advocate: How the SEC Protects Investors, Maintains Market Integrity, and Facilitates Capital Formation,* http://www.sec.gov/about/whatwedo.shtml, July 30, 2012.

[3] GASB, *Facts About GASB*, http://www.gasb.org/cs/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1175824006278&blobheader=application%2Fpdf, 2012.

Accounting Standards Board (IASB). There is pressure for the U.S. to replace GAAP with IFRS for purposes of creating a consistent accounting framework across the globe in response to the growth of the global economy. However, rather than a direct conversion to IFRS from U.S. GAAP, the current belief is that there will be a convergence process through joint projects of the IASB and FASB. It is expected that new standards would be developed and/or there would be an endorsement process whereby the FASB would evaluate and accept, reject or modify standards produced by the IASB.

IFRS already affect companies in the U.S. that currently have international subsidiaries or are subsidiaries of IFRS filers. At the time of the writing of this publication, IFRS 4, which pertains to the recognition and measurement of insurance contracts, permits insurance companies to report under the current accounting rules of their local country with slight modifications. An example of one such modification is requiring companies to establish premium deficiency reserves, as needed, regardless of local requirements. Given the current lack of a detailed measurement model under IFRS for insurance contracts, one of the key joint projects of the IASB and the FASB is development of a new accounting standard for insurance contracts. We will discuss the pending proposals of the IASB and FASB and how they differ from the measurement of insurance liabilities today.

CHAPTER 2. RELEVANCE OF FINANCIAL REPORTING TO THE ACTUARY

IMPORTANCE AND OBJECTIVES OF FINANCIAL REPORTING

Actuaries estimate the financial impact of insurable events. As such, actuaries need to understand the accounting rules under which the financial impact is being reported. Consider the actuary providing an estimate of an insurance company's unpaid claims for purposes of comparison to recorded loss reserves on the company's balance sheet. If the balance sheet is prepared under Statutory Accounting Principles (SAP), then the loss reserves are recorded on a net of reinsurance basis. If the company's financial statements are prepared under Generally Accepted Accounting Principles (GAAP), then the loss reserves are recorded gross of reinsurance. For comparison purposes, the actuarial estimate of unpaid claims would need to be prepared on a net basis for SAP and gross basis for GAAP. The actuary might also provide an estimate of unpaid claims ceded to the company's reinsurers, for comparison to the reinsurance recoverable amount recorded as an asset on a GAAP basis.

Actuaries providing estimates of unpaid claims on a SAP basis must also be aware of state regulations under which the company is recording its loss reserves. For example, while the National Association of Insurance Commissioners *Accounting Practices and Procedures Manual* permits companies to discount workers' compensation reserves on a tabular basis,[4] certain states have varying requirements with respect to whether and how the tabular discount is applied.[5] For instance, as of December 31, 2011, the state of Montana permitted tabular discounting but required use of a specific interest rate in the calculation (4%).[6]

To take this one step further, actuaries issuing Statements of Actuarial Opinion should include a statement within the opinion stating that the company's recorded loss and loss adjustment expense reserves "meet the requirements of the insurance laws of (state of domicile)."[7] The opining actuary is therefore required to read the state regulations and confirm that the recorded reserves meet the state laws.

The accounting convention is not only important to the reserving actuary for an insurance company, but also to actuaries who perform other jobs, including but not limited to the following:

- Working with regulators to monitor the financial health of insurance companies
- Pricing and designing insurance products, including development of profit margins

[4] According to page C-3 of the American Academy of Actuaries, *2011 Property/Casualty Loss Reserve Law Manual*, tabular reserves are defined as "indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation, or recovery from disability applied to a reasonably determinable payment stream. This definition shall not include medical loss reserves or any loss adjustment expense reserves."

[5] American Academy of Actuaries, *Property/Casualty Loss Reserve Law Manual*, 2011, page A-6.

[6] Ibid., page 452.

[7] NAIC, *Annual Statement Instructions Property/Casualty,* 2011, page 12.

- Determining capital requirements to support the various risks of an insurer
- Evaluating risk transfer of reinsurance contracts
- Assessing reserve adequacy for non-insurance entities, such as organizations that self-insure or retain a portion of their property/casualty insurance exposures
- Preparing tax returns
- Appraising and valuing insurance companies in merger and acquisitions

For each of the above, the result of the work performed will differ depending on the accounting framework used, illustrating the need for actuaries in different disciplines to be knowledgeable about the various accounting and financial reporting frameworks.

CHAPTER 3. OVERVIEW OF THIS PUBLICATION

ROADMAP

This publication begins with an overview of basic accounting concepts (*Part II. Overview of Basic Accounting Concepts*) and then delves into the fundamental aspects of the statutory Annual Statement and certain supplemental filings, that provide the means for financial reporting in the U.S. under Statutory Accounting Principles (SAP) (*Part III. SAP in the U.S.: Fundamental Aspects of the Annual Statement* and *Part IV. Statutory Filings to Accompany the Annual Statement*). Measurement tools used to evaluate the financial health of a property/casualty insurance company are discussed in *Part V. Financial Health of Property/Casualty Insurance Companies in the U.S*. These tools are particularly important to regulators in monitoring solvency for the purpose of protecting the stakeholders of an insurance company. We then investigate differences between statutory reporting and other financial reporting frameworks in the U.S., namely Generally Accepted Accounting Principles, International Financial Reporting Standards and tax accounting in *Part VI. Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S*. We move on to Canada to provide a discussion of Canadian accounting principles (*Part VII. Canadian-Specific Reporting*). The publication closes with a discussion of the future of SAP and evolution of new accounting frameworks, differentiating between what is "real" and what is only in the discussion phase at the time of publication of this text (*Part VIII. The Future* of SAP).

ANNUAL STATEMENTS REFERENCED THROUGHOUT THE PUBLICATION

The Casualty Actuarial Society (CAS) Syllabus Committee and authors of this publication agreed that it would be helpful for students studying for the CAS exams to be able to rely as much as possible on one insurance company throughout the publication to illustrate the major concepts. For the U.S. examples, the CAS Syllabus Committee has assisted us in creating excerpts of a 2011 Annual Statement for a fictional insurance company named Fictitious Insurance Company (Fictitious). The excerpts of this statement are contained in Appendix I of this publication.

We have relied on the Annual Statement excerpts for Fictitious for the more detailed examples and calculations. We also referenced the National Association of Insurance Commissioners *2011 Property and Casualty Annual Statement Blank*, which was also included on the CAS Exam 6 U.S. Syllabus at the time this publication was written. We recommend that each of these statements be viewed side by side with this publication when reading and working through examples and following the flow of exhibits, notes, interrogatories, and schedules within the Annual Statement. We also recommend that the reader review the Annual Statement for a real company for the current year because the aforementioned statements were based on 2011.

For Canada, we have used the 2011 aggregate experience of Canadian insurers as published on the website of the Office of the Superintendent of Financial Institutions (OSFI). As with the U.S. chapters, we recommend that the student have this information by his or her side when reading the Canadian chapters of this publication.

We acknowledge that there may be differences between exhibits within an Annual Statement; such differences are due to rounding.

BACKGROUND ON FICTITIOUS INSURANCE COMPANY

The authors of this publication felt it important to provide some background information on Fictitious and describe the landscape in which Fictitious was operating during the time period covered by its Annual Statement filing (December 31, 2011). This will provide additional context for students when reading and interpreting the figures contained therein.

Fictitious is a publicly held property/casualty insurance company in the U.S. As displayed in Table 1, approximately one-third of the company's writings in 2011 were in personal lines markets, with the remainder in commercial markets. Homeowners multiple peril (homeowners) was the largest single line written in 2011 on a net of reinsurance basis (17% of net written premium), followed by workers' compensation (15% of net written premium) and other liability — occurrence (13% of net written premium). The company wrote business in all 50 states in the U.S. and was therefore exposed to natural catastrophes and weather-related events in 2011.

TABLE 1

Fictitious Insurance Company Distribution of 2011 Written Premium (WP) by Line of Business (USD in 000s)				
	Direct WP $	Direct WP %	Net WP $	Net WP%
Line of Business				
Personal lines				
Homeowners multiple peril	4,646	16%	4,555	17%
Private passenger auto liability	2,804	10%	2,804	10%
Private passenger auto physical damage	1,661	6%	1,665	6%
Subtotal, personal lines	9,111	32%	9,024	34%
Commercial lines				
Fire	3,254	11%	2,484	9%
Commercial multiple peril (non-liability portion)	3,243	11%	3,032	11%
Commercial multiple peril (liability portion)	1,760	6%	1,645	6%
Workers' compensation	4,394	15%	4,022	15%
Other liability – occurrence	3,749	13%	3,502	13%
Commercial auto liability	2,334	8%	2,250	8%
Commercial auto physical damage	651	2%	647	2%
Fidelity	138	0%	146	1%
Subtotal, commercial lines	19,523	68%	17,728	66%
Total	28,634	100%	26,752	100%

In terms of the frequency of catastrophe losses incurred by insurance companies worldwide, 2011 was an unprecedented year. Catastrophes ranged from tornadoes in the U.S. to tsunamis and flooding overseas. According to an article by *National Underwriter* in early 2012, "Underwriting losses are expected to total approximately $33.9 billion for 2011, the second consecutive year of underwriting losses and the third-largest annual underwriting loss ever behind 2001 ($56.4 billion) and 2002 ($34.3 billion)."[8] The *National Underwriter* article goes on to say, "The industry's combined ratio climbed 6.5 points to 107.5 for 2011. Catastrophe-related losses accounted for 10.1 points, compared to 4.6 points in 2010."[9]

As we shall see through examination of the company's 2011 Annual Statement, Fictitious did not escape the financial impact of the natural catastrophes in the U.S. During 2011, Fictitious experienced a net loss from underwriting of $2 million, largely due to events including wildfires in Texas, New Mexico and Arizona; tornadoes in the Midwest and Southeast; the Halloween Nor'easter; and Tropical Storm Lee and Hurricane Irene's impact on the East Coast. The company's net loss and loss adjustment expense (LAE) ratio for accident year 2011 was about 10 percentage points higher than that for accident year 2010.

[8] Gusman, P. "2011 Cats Lead to Largest U.S. P&C Underwriting Loss Since 2002," *National Underwriter PropertyCasualty 360,* February 6, 2012.
[9] Ibid.

When reading this publication and reviewing the 2011 Annual Statement for Fictitious Insurance Company, note that the U.S. insurance market, including Fictitious, continued to feel the effects of the financial crisis of 2008. Despite a soft insurance market,[10] insurance companies experienced declines in premium volume due to affordability and other economic issues.[11] They also experienced declines in investment income due to instability in the financial markets. The continued soft market conditions also contributed to the increasing loss and LAE ratio in 2011.

[10] A soft market is one where insurance prices are low and therefore insurance is cheaper for the consumer. The insurance industry tends to observe increasing loss ratios in a soft market because the consumer is paying less in premiums for the same level of insurance protection.

[11] For example, workers' compensation premium, which is determined based on a rate multiplied by payroll, declined over the period due to decreases in payroll levels as a result of the economic environment.

PART II. OVERVIEW OF BASIC ACCOUNTING CONCEPTS

INTRODUCTION TO PART II

Part II of this publication will provide a detailed discussion on the construction, use and interpretation of an insurance company's financial statements and other financial information. Before beginning that detailed discussion, we will introduce two important accounting topics: primary financial statements and key accounting concepts. Both are recurring topics throughout this publication, and a basic understanding will be helpful to students.

CHAPTER 4. PRIMARY FINANCIAL STATEMENTS

PRIMARY FINANCIAL STATEMENTS

Although there are numerous accounting frameworks, they generally rely on a few primary financial statements. Of these, the two most commonly referenced are the balance sheet and the income statement. Other primary financial statements include the statement of capital and surplus (or equity) and the statement of cash flow. The financial statements are accompanied by subsequent pages of notes, which provide additional information that helps explain balances within the financial statements.

BALANCE SHEET

The balance sheet presents all of a company's assets and liabilities as of a specific point in time. Assets are defined as resources obtained or controlled by a company as a result of past events that have a probable future economic benefit to the company. Liabilities are probable sacrifices of economic benefits arising from present obligations of a company to transfer assets or provide services to other entities in the future as a result of past events. The relationship between the assets and the liabilities of a company is important, because it is a measure of the company's ability to use its assets to fully satisfy its liabilities. The difference between assets and liabilities is generally referred to as net worth (or equity); in the case of an insurance company reporting under Statutory Accounting Principles (SAP), this difference is referred to as statutory surplus (or policyholders' surplus).

One unique aspect of insurance companies' balance sheets is the inherent uncertainty associated with the estimation of the liability for unpaid claims and claim adjustment expenses (loss reserves). While a certain amount of estimation is involved in other industries' accounting, the more significant estimates are generally with respect to asset valuation and collectibility and pale in comparison to the uncertainties involved in estimating loss reserves. Actuaries typically have an important role in valuing insurance company liabilities and are therefore critical to the accurate preparation of the balance sheet.

INCOME STATEMENT

While the balance sheet presents the financial balances of a company at a point in time, the income statement reveals a company's financial results during a specific time period. The general types of accounts that are used as a means to measure these results are revenue and expenses. Revenues are inflows or enhancements of assets or settlement of liabilities (or a combination of both) from delivering goods or services during the specific time period. Expenses are outflows or other use of assets or incurrence of liabilities (or a combination of both) from delivering or producing the goods and services that were provided during the specific time period. The difference between the amount of the revenues and expenses during the period is referred to as net income if it is positive or net loss if it is negative.

The nature of the service provided by insurance companies, which is a promise to pay claims in the future if some specific criteria are met, creates unique accounting challenges. Insurance accounting standards address how to earn the premiums insurance companies are paid and how to measure and when to record claim costs resulting from the insurance coverage. Again, actuaries usually play a significant role in the estimation of the amount and timing of these future payments and therefore are critical to the accurate preparation of the income statement. Another important source of revenue for insurance companies is investment income, which will be discussed in *Chapter 8. The Statutory Income Statement*: Income and Changes to Surplus.

CAPITAL AND SURPLUS

The statement of capital and surplus reflects certain changes in surplus that are not recorded in the income statement and reconciles the beginning surplus to the ending surplus for the reporting period. This statement is similar for insurance companies and for other types of companies; however, there are several items within the statement of capital and surplus, such as those related to nonadmitted assets and the provision for reinsurance, that are unique to insurers. These items and others will be discussed in *Chapter 7. Statutory Balance Sheet*: A Measure of Solvency and *Chapter 8. The Statutory Income Statement*: Income and Changes to Surplus.

CASH FLOW

The cash flow statement receives less attention but is also important. This financial statement is necessary because the timing of the receipt or payment of cash for a revenue or expense does not necessarily coincide with the recognition of that revenue or expense from an income statement perspective. In other words, even if the cash payment is received sometime before or sometime after the good or service is provided, the associated revenue is generally recognized at the time the good or service is provided. The cash flow statement presents all operations strictly from a cash perspective.

In other industries, companies face liquidity issues when they cannot collect revenue in cash on a timely basis, and this type of liquidity issue would be made evident by the statement of cash flows. An example of this would be a manufacturing company that sold products on credit but was not able to collect the cash on a timely basis to pay their expenses. For insurance companies, this specific type of liquidity issue is less likely to occur due to the collection of premiums at the onset of the policy and the subsequent payment of losses. This difference in the order of cash receipts and disbursements somewhat diminishes the importance of cash flow statements for insurance companies. Further, actuaries are not generally involved in or necessary for the preparation of the cash flow statement, so this financial statement is not covered in detail in this publication.

NOTES TO FINANCIAL STATEMENTS

In addition to the four primary financial statements already discussed, another important element is the notes to financial statements. The notes include quantitative and qualitative disclosures regarding the significant accounts presented in the financial statements. This includes matters that are relevant or may be relevant to the users of the financial statements. For instance, the notes will typically describe the basis of accounting used in the preparation of the financial statements, as well as any important details on specific aspects of the financial statements that are based on estimates or subject to uncertainty. We will discuss several of the footnotes to the financial statements that are of specific importance to actuaries in *Chapter 10. Notes to Financial Statements*.

CHAPTER 5. KEY ACCOUNTING CONCEPTS

Throughout each major accounting framework, there are several common key concepts. Understanding these key concepts will be beneficial to anyone who is involved in using or preparing financial statements because it will allow them to appreciate the purposes of and the differences between each framework. A few of the most important and relevant concepts are below.

- Liquidation vs. going concern: When preparing financial statements, it is possible to view the company as either an ongoing business (going concern) or as a run-off of the current assets and liabilities (liquidation). Either perspective may be appropriate depending on the user and purpose of the financial statements. For instance, investors would generally be most interested in the value of a business as a going concern, whereas regulators may think in terms of a liquidation perspective, given that they are primarily interested in satisfying policyholder obligations.

- Fair value vs. historical cost: There are often multiple possible approaches to valuing a given asset or liability. The choice of approach is of particular importance when the value of that asset or liability is uncertain. Recording an asset or liability at fair value means recording it at a value that it would be bought or sold for in the open market, while recording at historical cost means valuing it at the original purchase price less depreciation. In cases where the value of an asset or liability is uncertain, there is a trade-off between the reliability of the historical cost method (in that it is objectively verifiable) and accuracy of the fair value approach (in that it is more consistent with the actual market value).

- Principle-based vs. rule-based: Each aspect of any accounting framework is generally guided by either a principle or a rule. A principle describes a general accounting approach that must be interpreted and applied, while a rule provides specific accounting guidance on how something should be done. There is a trade-off because the rules-based guidance may be easier to understand and to audit, but a principles-based approach is generally more adaptable to changes in the business environment.

PART III. SAP IN THE U.S.: FUNDAMENTAL ASPECTS OF THE ANNUAL STATEMENT

INTRODUCTION TO PART III

In the U.S., property/casualty insurance companies report their financial results to state insurance regulators in what is called the Annual Statement. For those who have never used or seen an Annual Statement, it is an 8.5" x 14" book. The Property/Casualty Annual Statement is identified by its yellow cover, while the Life Annual Statement's cover is blue (known as the yellow book and blue book, respectively). Both types of Annual Statements are publicly available documents.

The Annual Statement is developed and maintained by the National Association of Insurance Commissioners and is often referred to as "the Blank." The Blank is the template that insurance companies use to report under Statutory Accounting Principles (SAP), and is uniformly adopted by all states. This allows insurance companies licensed in multiple states to prepare one Annual Statement for filing with all states. The Annual Statement is accompanied by NAIC instructions that are generally adopted by all states, though there are instances of specific differences and exceptions.

The first page in the Annual Statement is the Jurat page, which provides basic information about the reporting entity, such as name, NAIC code, address, name of preparer and title, and officers of the reporting entity. The notarized signatures of officers of the reporting entity are included on this page, attesting to the accuracy of the information contained therein.

Following the Jurat page are the statutory financial statements. The statutory Annual Statement contains other exhibits and schedules that provide further insight into the insurance company's statutory financial statements and historical experience. These include General Interrogatories; Five-Year Historical Data; and Schedules A, B, BA, D, DA, F, P, T and Y.

In *Part III. SAP in the U.S.: Fundamental Aspects of the Annual Statement,* we will walk through the Property/Casualty Annual Statement, beginning with the financial statements, and discuss the related accounting requirements. We provide examples to illustrate the uses of the Annual Statement and how certain amounts are calculated and compiled.

CHAPTER 6. INTRODUCTION TO STATUTORY FINANCIAL STATEMENTS

INTRODUCTION

This chapter focuses on Statutory Accounting Principles (SAP) and specifically discusses the fundamental aspects of the Annual Statement, including the financial statements themselves (the balance sheet and income statement, for example), as well as the other exhibits and filings that accompany the Annual Statement (such as various schedules, the Insurance Expense Exhibit and the Risk-Based Capital calculation). *Part V. Financial Health of Property/Casualty Insurance Companies in the U.S* will discuss how this information can be used to assess the financial health of an insurance company and *Part VI. Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S* will focus on differences between SAP and the other financial and relevant regulatory reporting regimes.

SAP AND THE NAIC

The National Association of Insurance Commissioners (NAIC) operates through various committees that comprise state insurance commissioners and their staff. Through these committees, the NAIC regularly updates SAP and creates model insurance laws and regulations that individual states may elect to adopt. While this generally leads to a good deal of uniformity in insurance regulation, there are still instances of differences between states. For example, individual states have the ability to permit accounting practices that differ from NAIC SAP ("permitted practices"). And, model laws and regulations are not always enacted by all states exactly as adopted by the NAIC.

It is worth noting that the NAIC may revise the Annual Statement each year, and these changes are described on the NAIC website. Some of the examples and exhibits provided in this section of the publication are based in part on the information provided in the 2011 industry Annual Statements.[12]

[12] Accessed via SNL.com by SNL Financial LC.

CHAPTER 7. STATUTORY BALANCE SHEET: A MEASURE OF SOLVENCY

As previously noted, the primary focus of statutory accounting is to highlight potential solvency issues (an insurance company's capability to meet its obligations to its policyholders and creditors). Consequently, the most important aspect of an insurance company's financial statements to an insurance regulator is the strength of its balance sheet (i.e., the extent to which its assets are sufficient to meet all liabilities).

RELEVANCE TO ACTUARIES

Solvency and the balance sheet are relevant to the actuary for two primary reasons.

First, actuaries traditionally have some responsibility for the loss and loss adjustment expense (LAE) reserves, which represent the majority of the liabilities for property/casualty insurance companies. Actuaries may either participate directly in the reserve-setting process, or they may assess the reasonableness of the reserves established by company management. Actuaries involved in either of these functions are focused on the liabilities for losses and LAE on the Liabilities, Surplus and Other Funds page of the Annual Statement (page 3).

Second, actuaries often have a role in determining or assessing the amount of capital that an insurance company requires to support the risks that it has taken through its business operations. In the context of statutory accounting, this would be based on an actuary's understanding of the Risk-Based Capital (RBC) framework to calculate the required capital at a given point in time (see *Chapter 19. Risk-Based Capital*). More broadly speaking, actuaries may evaluate the surplus needs on other bases, including on an economic basis, which is guided by the insurer meeting some economically defined criteria for solvency. In both of these cases, an actuary who is evaluating an insurance company's capital will need to be familiar with the assets and the liabilities on the balance sheet (pages 2 and 3), as well as the risk characteristics of each of those items.

This chapter will provide an overview of the composition of the two main categories in the statutory balance sheet:

- Assets (page 2)
- Liabilities, Surplus and Other Funds (page 3)

ASSETS[13]

Assets can be broadly defined as a property, right or claim arising from past events that has future value. From an individual perspective, we are all accustomed to the concept of owning

[13] In general, this section aligns with Chapter 2 (Assets) of Property Casualty Insurance Accounting by the Insurance Accounting and Systems Association (IASA). References to other sections in IASA that were previously on the CAS Syllabus will be included throughout. Readers seeking additional detail may consult with IASA on these topics or other topics.

financial assets, such as stocks and bonds, and owning real assets, such as a home or vehicle. Insurance companies own various assets in the same way that an individual does, and those assets are summarized on page 2 of the Annual Statement Blank (the balance sheet). Some of these assets are consistent with assets of non-insurance entities, and some are specific to insurance companies.

Table 2 summarizes the major assets held by the U.S. property casualty insurance industry as of December 31, 2011.[14] The first column indicates the numerical label for each item, as presented on page 2 of the Annual Statement. Only the material line items are shown in this summary.

TABLE 2[15]

Assets: Total U.S. P&C Insurance Industry SNL Briefing Book — U.S. 2011 Statutory Financials, NAIC Format (USD in OOOs)						
Line	Description	Assets	% of Total	Nonadmitted Assets	Net Admitted Assets	% of Total
1.	Bonds	902,605,065	55%	116,731	902,488,334	57%
2.1	Preferred stocks	11,685,355	1%	66,292	11,619,064	1%
2.2	Common stocks	232,556,368	14%	3,386,260	229,170,621	14%
4.	Real estate	10,413,352	1%	42,809	10,370,543	1%
5.	Cash, cash equivalents and short-term investment	72,609,565	4%	24,662	72,584,902	5%
8.	Other invested assets	122,592,988	7%	5,357,863	117,272,227	7%
12.	**Subtotal, cash and invested assets**	**1,352,462,693**	**82%**	**8,994,617**	**1,343,505,691**	**84%**
15.1	Uncollected premiums and agents balances	45,078,729	3%	2,434,863	42,643,866	3%
15.2	Deferred premiums and agents balances	79,570,809	5%	213,418	79,357,391	5%
16.1	Amounts recoverable from reinsurers	29,954,875	2%	12,006	29,942,869	2%
18.2	Net deferred tax asset	47,756,959	3%	18,622,680	29,134,278	2%
23.	Receivables from parent, subsidiaries and affiliates	11,821,940	1%	583,221	11,238,720	1%
25.	Aggregate write-ins	34,218,694	2%	16,917,907	17,300,786	1%
	Other non-invested assets	44,439,228	3%	6,427,659	38,021,770	2%
	Subtotal, non-invested assets	**292,841,233**	**18%**	**45,211,754**	**247,639,680**	**16%**
28.	**Total**	**1,645,303,926**	**100%**	**54,206,371**	**1,591,145,370**	**100%**

[14] Accessed via SNL.com by SNL Financial LC.

[15] We acknowledge that assets minus nonadmitted assets should equal net admitted assets. However, there are certain line items in this table where this equation does not hold. We have taken the data as provided from SNL Financial LC without modification.

As shown in Table 2, the U.S. property/casualty industry held $1.6 trillion dollars of assets as of December 31, 2011. The statutory balance sheet makes two broad distinctions regarding assets held by insurers:

- Cash and invested assets vs. non-invested assets: Assets are categorized by this criterion to identify the proportion of an insurer's asset that is readily convertible to cash. The "cash and invested assets" are assets that could be readily sold in near term to meet the insurer's liabilities, while the "non-invested assets" are less liquid. This distinction is in line with the emphasis that statutory accounting places on solvency. Rows 1 through 12 on the Assets page include cash and invested assets, while rows 13 through 25 include non-invested assets.

- Admitted vs. nonadmitted assets: As shown in Table 2, there are separate columns that depict the amount of assets that are nonadmitted. These nonadmitted assets, which represent about 3% of total assets, are not recognized by state insurance departments in evaluating the solvency of an insurance company for statutory accounting purposes. The rationale for this exclusion is that those nonadmitted assets are not readily convertible for use to meet an insurer's liabilities now *or in the future* and thus would not be reasonable to consider in evaluating a company's solvency. In many cases nonadmitted assets are determined by formulae established by the National Association of Insurance Commissioners (NAIC). As shown in Table 2, there are nonadmitted assets in the cash and invested assets categories and the non-invested assets categories, though the proportion of nonadmitted assets is much lower for cash and invested assets. Several common examples of nonadmitted assets will be discussed in the description of the specific asset classes below (such as certain uncollected and deferred premiums and agents' balances and net deferred tax assets), which will help to demonstrate this point.

Those distinctions aside, it is clear from Table 2 that the largest asset class for the property casualty industry in 2011 was bonds, which represented 57% of the industry's total assets, followed by common stocks, which represented 14% of the industry's total assets. These statistics have remained relatively consistent over the years. While most actuaries will not need to have a deep understanding of each of the asset classes on the balance sheet, is it worthwhile to know a few relevant details on the largest classes to have a fundamental understanding of the balance sheet.

Bonds (Line 1)

Bonds are securities that pay one or more future interest payments according to a fixed schedule. The face value of a bond refers to the amount that is to be paid in the final single payment at the maturity of a bond. When an insurance company purchases a bond, the value of that bond is recorded as the actual cost, including brokerage and other fees. This purchase price may be more or less than the face value of the bond.

To the extent that the purchase price is higher (or lower) than the face value of the bond, a bond premium (or discount) is recorded as a part of the recorded amount. Over the life of the bond, that bond premium or bond discount will be amortized according to a constant yield approach. The reason for this amortization is that when the bond ultimately matures, the amortized value will be equal to the face value, eliminating a lump sum gain or loss at the maturity of the bond.

After the purchase, statutory accounting indicates that bonds be recorded at one of the following bases:

- Amortized cost
- The lower of amortized cost and fair value

The rating the NAIC's Security Valuation Office (SVO) assigns to the bond determines the applicability of the two bases above. The six possible ratings are NAIC 1 through NAIC 6, which range from the "highest quality" bonds to "bonds in or near default," respectively. Bonds with the two highest ratings (NAIC 1 and 2) are carried at amortized cost, while bonds with ratings NAIC 3 ("medium quality") and below are carried at the lower of amortized cost or fair value. The amount at which a bond is recorded, following these criteria, is referred to as the adjusted carrying value.

Schedule D of the Annual Statement provides details on the specific bonds that are held by an insurance company, including the following:

- Type of issuer (e.g., federal, state or corporate)
- Maturity (e.g., one year, one year to five years)
- NAIC Class (Class 1 through Class 6)

Based on the industry aggregate Annual Statement as of December 31, 2011, insurance companies' bond portfolios were made up of approximately one-third government-sponsored entity bonds; one-third corporate bonds; and one-third federal, state and local government bonds. By maturity, about half of bonds held were 5 years to maturity or less, with the majority of the remainder having maturities between 5 and 10 years. Furthermore, approximately 86% of bonds held by insurers were in the NAIC Class 1.

Given that bonds are the largest asset class for property casualty insurers, an actuary or other user of the financial statements who is reviewing the financial health of an insurance company may benefit from reviewing the detail in Schedule D.

Stocks (Lines 2.1 and 2.2)

As shown in Table 2, approximately 15% of insurers' assets were in common or preferred stock. Stocks are securities that represent an ownership share in a company. Those ownership shares are subordinate to bondholders and creditors. Common stock ownership

confers voting privileges and may pay a dividend, though the dividend is not guaranteed. Preferred stock does not confer voting privileges but usually provides a guarantee on dividends to be paid, and usually has preference to common stock in the event of liquidation.

At purchase, stocks are valued at cost plus any brokerage or related fees. After purchase, publicly traded stocks are recorded at fair value, which is based on the market price that is readily available to the public and which can generally be determined from external pricing services. If a stock is not publicly traded or a price is not available, the NAIC's SVO will determine a fair value. Preferred stocks are assigned similar NAIC ratings as bonds with six rating levels, which dictate whether they are valued at amortized cost or fair value based on the NAIC rating.

Because stocks represent a relative minority of the assets held by property casualty insurance companies, and due to the volatility and uncertainty in the value of stocks, an actuary or other user of the financial statements who is evaluating the financial health of an insurance company should take note and investigate further if an insurance company has a relatively larger portion of their assets in stocks, compared to the overall industry.

Real Estate (Line 4)

Three classes of real estate are presented separately on the Assets page of the Annual Statement:

- Properties occupied by the company
- Properties held for the production of income
- Properties held for sale

These classes are relatively self-explanatory, though one detail to be aware of is that if a company occupies less than 50% of a property, it is classified as either a property held for production of income or a property held for sale (as opposed to a property occupied by the company). Properties in the first two categories are recorded at depreciated cost, while properties that are held for sale are recorded at the lower of depreciated cost and fair value.

Details of a company's real estate transactions and holdings are presented in Schedule A of the Annual Statement.

Cash, Cash Equivalents and Short-Term Investments (Line 5)

This asset class generally includes assets that are immediately convertible to cash. As of December 31, 2011, these assets represented nearly 5% of insurers' total assets, and approximately two-thirds of these assets were in short-term investments.

Cash equivalents must have an original maturity of less than three months, and short-term investments must have an original maturity of one year or less. In the Annual Statement, details on cash are provided in Schedule E-1, cash equivalents are described in Schedule E-2,

and short-term investments are found in Schedule DA. Further, a reconciliation is made in the Cash Flow statement showing cash, cash equivalents and short-term investments at the beginning of the year, adjusted for net cash (inflows minus outflows from operations, investments, financing and miscellaneous sources) during the year. The result is the amount of cash, cash equivalents and short-term investments at the end of the year, which is shown in line 5 of the Assets page.

Uncollected and Deferred Premiums and Agents' Balances (Lines 15.1 and 15.2)

These two asset classes represent premiums that have been written, but have not yet been received. Although the names of the asset classes refer to "agents' balances" (or balances due from policies sold by insurance agents, as intermediaries between the insurance company and the policyholder), both asset classes may also include uncollected premiums for policies sold directly to policyholders.

Uncollected premiums and agents' balances include premiums due on or before the financial statement date, while deferred premiums and agents' balances include premiums due after the financial statement date. Both classes include installment premiums that meet those timing criteria as well.

Premiums that are more than 90 days past due from an agent or a direct policyholder are considered nonadmitted assets. Furthermore, an insurer may determine that agents' balances that are 90 days or more overdue are unlikely to be collected (or "impaired"). In this event the insurer should establish an allowance for bad debts.

These two classes together represented nearly 10% of the industry assets as of December 31, 2011, highlighting that collectibility of these assets is relevant to a company's financial health and a measure of the efficiency of its collections' department. An actuary or other user of the financial statements who is reviewing the financial health of an insurer may consider the overall magnitude of a company's uncollected and deferred agents' balances and the percentage of agents' balances that are nonadmitted. Either one of these metrics could be benchmarked to the overall industry; a company having a significantly higher portion of its assets in these two classes relative to the industry would warrant further analysis to understand the impact to liquidity.

Amounts Recoverable from Reinsurers (Line 16.1)

This asset class reflects amounts that are expected to be recovered from a reinsurer on losses and LAE that have been paid by the company, but do not include expected reinsurance recoveries for loss and LAE reserves. The reason that expected recoveries for loss and LAE reserves are not included is that loss and LAE are already reflected net of reinsurance on the balance sheet. Additional detail on expected recoveries for both paid amounts and reserves are included in Schedule F, which will be discussed in detail in *Chapter 14. Schedule F*. The detail

included in Schedule F allows an actuary or other user of the financial statements to assess the quality and collectibility of the reinsurance recoverables.

Net Deferred Tax Assets (Line 18.2)

Deferred tax assets (DTAs) represent expected future tax benefits related to amounts previously recorded in the statutory financial statements and not expected to be reflected in the tax return as of the reporting date. They are referred to as "net" DTAs because they are recorded net of any deferred tax liabilities (DTLs) that exist. Two common sources of DTAs relevant to the actuary are the following:

- The difference in tax accounting and statutory accounting for loss reserves
- The carryforward of net operating losses from previous years

The first source of DTAs is particularly relevant to actuaries. For tax reporting purposes, loss reserves are discounted when determining pre-tax income. This means that an insurance company is not able to deduct from taxable income the full amount of losses that are incurred during a year. Therefore, assuming loss reserves are growing, a company's pre-tax income on a tax basis is higher than the company's pre-tax income on a statutory basis in the current year. In the future, as this discounting unwinds, the insurer will get a tax deduction, which will not be recorded in statutory financial statements because it was already recorded in the year the reserves were established. The value of this future deduction (35% of the deduction) represents the DTAs. This asset can be particularly significant for growing companies.

The second source of DTAs of relevance to the actuary (carryforward of net operating losses) occurs when an insurance company has net operating losses in one financial year and expects those losses to offset gains in the future, thereby reducing future tax liability.

For any DTA or DTL, an insurer can only record the portion of the asset or liability that is expected to be realized, based on available evidence. Furthermore, the insurer must perform an admissibility test to determine the amount of a DTA that can be considered as an admitted asset.

As shown in Table 2, DTAs were the largest single source of nonadmitted assets at December 31, 2011, representing $18.6 billion of the total $54.2 billion in nonadmitted assets, or just over 34%.

Receivables from Parent, Subsidiary and Affiliates (Line 23)

Many insurance companies are members of a national or international insurance group or may be affiliated with other insurance companies that are owned by the same parent company. These affiliates often share services or resources, such as internal support staff or third-party vendor agreements. In these cases, receivable balances for these services or resources exist between the parties. As shown in Table 2, these receivables accounted for

about 1% of assets held by the industry at December 31, 2011. If an individual company had a significantly larger portion of their assets in the form of receivables, a user of those financial statements may consider investigating further, as those receivables may not be as liquid or available as other asset types. More specifically, the user could attempt to ascertain the specific source of the receivables and the proportion of the receivables that are paid on time.

Other Nonadmitted Assets

In addition to the examples of nonadmitted assets already mentioned (agents' balances more than 90 days overdue and net DTAs that are do not meet the statutory admissibility test), there are other sources of nonadmitted assets. Several common examples include:

- Amounts held of specific types of bonds, stocks, mortgage loans or real estate that are in excess of limitations that exist in specific states
- Capitalized electronic data processing equipment and software in excess of state-specific limits for admitted assets
- Furniture, equipment and supplies
- Balances due from a broker when a security has been sold but the proceeds have not been received that are still outstanding more than 15 days after settlement
- Funds held or deposited with reinsured companies that exceed the associated liabilities
- 10% of deductibles recoverable on deductible and service-only insurance policies in excess of collateral specifically held and identifiable on a per policy basis

As previously noted, nonadmitted assets only represented about 3% of the total industry assets at December 31, 2011. However, due to their importance when measuring solvency, an actuary should be familiar with the sources of nonadmitted assets. If an actuary or other user of the financial statements observes that an insurer has a larger proportion of nonadmitted assets than the industry average, it may be worthwhile to investigate further to understand the source of those nonadmitted assets because they could be indicative of a problem with the business.

LIABILITIES AND SURPLUS[16]

A liability is an obligation that the company must fulfill, based on past events or transactions, which will require the use of the company's resources. Under the literal definition of solvency, a company must have assets that are at least equal to its liabilities to remain solvent.

To be prudent and to comply with RBC requirements (see *Chapter 19. Risk-Based Capital*), most insurance companies have assets that significantly exceed their liabilities. The amount of this excess of assets over liabilities is generally referred to as surplus. Surplus can be viewed as the equity in the business or as the source of protection to the policyholders. These three amounts follow the relationship shown below:

[16] Aligns with IASA Chapter 5.

Assets = Liabilities + Surplus

Or, equivalently,

Assets – Liabilities = Surplus

Because the combination of liabilities and surplus are equal to assets, liabilities and surplus are presented on the same page (page 3) of the Annual Statement. The assets reflected in the relationship above include only admitted assets because Statutory Accounting Principles (SAP) does not allow insurers to take credit for nonadmitted assets in surplus.

A breakdown of the industry liabilities and surplus amounts (page 3 of the Annual Statement) by significant account is provided in Table 3 as of December 31, 2011.[17]

TABLE 3

Liabilities, Surplus and Other Funds: Total U.S. Property/Casualty Insurance Industry
SNL Briefing Book — U.S. 2011 Statutory Financials, NAIC Format (USD in 000s)

Line	Description	Liabilities	% of Total
1.	Losses	496,162,946	31%
2.	Reinsurance payable on paid loss and loss adjustment expenses	17,442,626	1%
3.	Loss adjustment expenses	104,532,699	7%
5.	Other expenses (excluding taxes, licenses and fees)	23,863,600	1%
9.	Unearned premiums	204,915,762	13%
12.	Ceded reinsurance premiums payable	40,200,154	3%
13.	Funds held under reinsurance treaties	24,144,250	2%
16.	Provision for reinsurance	2,994,296	0%
25.	Aggregate write-in for liabilities	42,889,678	3%
	Other liabilities	68,994,071	4%
28.	**Subtotal, liabilities**	**1,026,139,981**	**65%**
29.	Aggregate write-ins for special surplus funds	54,909,820	3%
30.	Common capital stock	4,536,681	0%
34.	Gross paid in and contributed surplus	186,691,158	12%
35.	Unassigned funds	300,443,945	19%
	Other surplus and capital	15,512,118	1%
37.	**Subtotal, surplus as regards policyholders**	**562,093,722**	**35%**
38.	**Total**	**1,591,145,369**	**100%**

First, note that the total amount of liabilities and surplus shown in Table 3 ($1.591 trillion) is exactly equal to the amount of net admitted assets that were shown in Table 2. This relationship must be true given the fundamental equation of Assets = Liabilities + Surplus.

[17] Accessed via SNL.com by SNL Financial LC.

The next observation that can be made is that the insurance industry carried liabilities and surplus on its balance sheet in a ratio of roughly 2 to 1 as of December 31, 2011. On the surface, this suggests that the industry as a whole had sufficient assets to be able to sustain a sizeable increase in liabilities (or reduction in asset values) while still maintaining solvency, due to the current positive difference of assets relative to liabilities.

However, this may not be true at the individual company level, and there are also other risks that could affect surplus that are not reflected in either the recorded assets or liabilities (such as catastrophe risk or liquidity risk). An actuary can benchmark a company's ratio of liabilities to surplus against the current industry average. Further investigation may be warranted if the ratio is significantly higher than that of the industry. A review of the company's RBC would be the next logical step.

We can also measure each of the underlying accounts in relation to total liabilities or surplus. Together, loss and LAE reserves (lines 1 and 3) have historically been the largest liability item on a property/casualty insurance company's balance sheet. As of December 31, 2011, this item represented nearly 60% of total industry liabilities. This speaks to the importance of property/casualty actuaries to the financial reporting process because they are often the most suited to evaluate and establish those liabilities. The next largest liability class is unearned premium reserves, which made up approximately 20% of the industry liabilities as of December 31, 2011. Given actuaries' involvement in pricing products, actuaries certainly play a role in this premium account. To the extent the unearned premium is not adequate to cover expected future losses, LAE and maintenance expenses, additional liabilities need to be recorded. Actuaries often play a key role in that analysis.

A brief description of each of the key liabilities and surplus classes is provided below.

Loss and Loss Adjustment Expense Reserves (Lines 1 and 3)

The required basis for loss and LAE reserves under SAP is defined by SSAP 55, *Unpaid Claims, Losses, and Loss Adjustment Expenses*. Statements of Statutory Accounting Principles (SSAP) 55 states that the recorded liabilities for loss and LAE reserves, for each line of business and for all lines of business in the aggregate, should be based on "management's best estimate" (note that this term is not explicitly defined in the accounting guidance). Further, SSAP 55 requires that management consider the variability in the estimate of these liabilities. The standard states that management's best estimate may consider a range of estimates; in the rare instances when no point within the range is considered to be a better estimate than other points within the range, the midpoint of the range should be used.

Note that SSAP 55 refers to management's best estimate and not the actuary's best estimate or central estimate. However, management will often rely on an actuary's estimate, in whole or in part, in establishing their own best estimate to be recorded on the balance sheet.

Whether or not management relies on an actuary in establishing the recorded reserves, the NAIC Model Law for Property and Casualty Actuarial Opinions (MDL-745)[18] requires that a Statement of Actuarial Opinion be provided that attests to the adequacy of the recorded liabilities (see *Chapter 16. Statement of Actuarial Opinion*).

Significant detail on the loss and LAE reserves is included in Schedule P of the Annual Statement. Schedule P provides loss and LAE reserves both gross and net, and also breaks down the total reserves by line of business and accident year. Further detail on the data in Schedule P and the potential uses of that data are described in *Chapter 15. Schedule P*. There are also relevant references to loss and LAE reserves in the Notes to Financial Statements within the Annual Statement (see *Chapter 10. Notes to Financial Statements*).

Because loss and LAE reserves are often the largest most variable liability on an insurer's balance sheet, they are of critical importance to the financial health of an insurance company.

Reinsurance Payable on Losses and Loss Adjustment Expenses (Line 2)

Reinsurance payable on losses and LAE includes liabilities related to assumed reinsurance contracts and is for loss and LAE that have already been paid by the reinsured. A detailed breakdown of this amount by type of reinsurer (e.g., affiliated, authorized and unauthorized as well as U.S. and non-U.S.) is provided in Schedule F, Part 1, column 6. Liabilities under assumed reinsurance contracts for loss and LAE that are reserved by the reinsured, but not paid, are included in lines 1 and 3 of the Liabilities, Surplus and Other Funds page (loss and LAE reserves).

Other Expenses (Excluding Taxes, Licenses and Fees) (Line5)

In general, an insurance company's expenses can be separated into two broad categories: LAE and underwriting and investment expenses. Further divisions can be made within each category. The underwriting and investment expense category can be further divided into the following subcategories:

- Commission and brokerage expenses
- Taxes, licenses and fees
- General and administrative expenses
- Investment expenses

The other expenses liability item on the balance sheet generally represents incurred but not yet paid expenses from the third and fourth categories listed above. Additional detail on these expenses can be found in the Underwriting and Investment Exhibit (U&IE), Part 3, Expenses, where the unpaid expenses are shown on line 26. Although this exhibit does not provide the

[18] NAIC, *Model Regulation Service – January 2012, Index and Model Description*, MDL-745, http://www.naic.org/documents/committees_models_index.pdf, 2012.

breakdown of the unpaid expenses by expense category, the total incurred expenses during the calendar year for these other expenses are included on lines 3 through 18.

An additional observation from U&IE, Part 3 is that each category of other underwriting expenses is split between column 1 (Loss Adjustment Expenses), column 2 (Other Underwriting Expenses) and column 3 (Investment Expenses). This is based on an allocation that is performed by the company, and that allocation determines whether unpaid amounts in these categories appear on the balance sheet as LAE reserves or as other expenses liabilities. Additional discussion regarding other expenses is provided in *Chapter 8. The Statutory Income Statement: Income* and Changes to Surplus. Further detail regarding the allocation of expenses by category is also provided in the following chapter (*Chapter 18. Insurance Expense Exhibit*).

Unearned Premiums (Line 9)

Unearned premium represents a liability related to the unexpired portion of all policies in force. For any individual in-force policy, the total amount of written premium can be separated into earned and unearned portions. In the simplest and most common case, this split is made by the number of coverage days in the total policy period that are expired or unexpired, respectively. This approach is referred to as the daily pro rata method and is the standard method used for lines such as automobile insurance, homeowners, general liability or property.

Another approach that is sometimes used is called the monthly pro rata method. This method assumes that policies are written evenly over the course of the month. Based on that assumption, 1/24 of the premium written in a given month is expected to earn in that month. Subsequent to that, 1/12 is expected to be earned in the next 11 months, and the remaining 1/24 is earned in the thirteenth month. This abbreviated method allows for a calculation of the earned premium in each month with less data and calculations.

Some specific types of coverage require different approaches to calculating earned premium (e.g., title insurance, financial guaranty and ocean marine).

The unearned premium reserve serves the important purpose of recognizing revenue over the time period the policy is in force. Unearned premium reserves represent an insurer's obligation to provide future coverage and the potential obligation to refund the unexpired portion of the premium to a policyholder, in the event that a policy is cancelled.

While this accrual of unearned premium and the subsequent earning of that premium may appear to be an attempt to match revenues with expenses, this is not the case. Statutory accounting requires that expenses related to the acquisition of an insurance policy be realized as an expense at the time of acquisition. Despite that, the full amount of the written premium is still recorded as an unearned premium reserve at the inception of the policy. This departure from the matching principle that is commonly followed in accounting regimes exists to allow

for a more conservative solvency-focused presentation because it results in lower policyholders' surplus, which is consistent with the objective of SAP.

Additional detail of the composition of the unearned premium recorded on page 3 (Liabilities, Surplus and Other Funds) of the Annual Statement can be found on page 7, which is part of the U&IE. Page 7 (U&IE Part 1) shows the breakdown of the total unearned premium into the following four categories:

- Amount unearned (running one year or less from date of policy)
- Amount unearned (running more than one year from date of policy)
- Earned but unbilled premiums
- Reserve for rate credits and retrospective adjustments based on experience

The first two categories above are relatively self-explanatory and separate the unearned premium related to policies with effective periods that are one year or less and policies with effective periods that are longer than one year. The third category, earned but unbilled (EBUB) premiums, includes estimated adjustments that will occur to the premium on audit-type policies where the actual amount of premium depends on some exposure measure, such as payroll, and is unknown until the end of the policy period. EBUB premiums are only recorded if they are reasonably estimable in the aggregate. The fourth category represents the expected adjustments that will occur on retrospectively rated policies, where the premium is variable based on the loss experience on the policy.

In addition, SAP and GAAP require an insurer to establish a separate premium liability, referred to as a premium deficiency reserve, if the unearned premium reserve for a portion of the business is not sufficient to cover the expected corresponding losses, expenses and other costs. An actuary in either a reserving or pricing role should be aware of the criteria that dictate when a premium deficiency reserve is required so they can advise management accordingly. Different criteria apply for short-duration and long-duration contracts. Additional discussion of premium deficiency reserves is included in *Chapter 10. Notes to Financial Statements*.

Ceded Reinsurance Premiums Payable (Line 12)

Ceded reinsurance premiums payable represent premiums that are owed to reinsurers for ceded reinsurance. This liability is recorded net of any commission retained to cover expenses that were incurred issuing the reinsured policies. This line item does not include ceded reinsurance that are owed to the reinsurer or other funds that are being held as a deposit by the ceding company as collateral for payment of the reinsurer's obligations under specific terms of the reinsurance treaty, which is reflected in the next item, "Funds Held Under Reinsurance Treaties," discussed below.

Funds Held Under Reinsurance Treaties (Line 13)

These liabilities relate to funds that are held by a ceding company as collateral from a reinsurer. The funds provide security to the ceding company that the reinsurer will pay losses as they come due. This is particularly common in the case of unauthorized reinsurers (companies not authorized or licensed to do business in the ceding company's state of domicile) because it allows the ceding company to avoid a statutory accounting penalty on the recoverables from the unauthorized reinsurer. This penalty is described in SSAP 62, which states that a recoverable from an unauthorized reinsurer that is not sufficiently collateralized is a nonadmitted asset. As noted above, this category also included ceded reinsurance premiums that were payable but were held according the terms of the reinsurance agreement.

Provision for Reinsurance (Line 16)

Although the magnitude of this liability category is not large for most insurers, it is worth mentioning because it is unique to statutory accounting. The provision for reinsurance is a statutory liability established for reinsurance recoverables that may not be collectable. The change in this provision is recorded directly to surplus. This penalty applies to all reinsurers that are slow to pay or that are disputing amounts owed to the ceding company and unauthorized reinsurers that do not meet the collateral requirements of the ceding company's domiciliary state. The actual details of the calculation of the provision for reinsurance are shown in Schedule F, Parts 4 through 7 (*Chapter 14. Schedule F* provides the details underlying this calculation).

Note that the net loss reserves, net unearned premium and the amounts recoverable from reinsurers for paid losses on page 2 of the Annual Statement are net of reinsurance but are stated without regard for the provision for reinsurance. The provision for reinsurance appears on page 3 and is a direct reduction to surplus and does not affect a company's assets or income. This direct reduction to surplus and other direct reductions to surplus will be discussed in *Chapter 8. The Statutory Income Statement: Income* and Changes to Surplus.

Common Capital Stock (Line 30)

Common capital stock is a surplus account that is equal to the par value of the common stock issued and outstanding. This account only applies to stock insurance companies and does not exist for purely mutual insurance companies. Par value is an amount set by the issuer of a stock (the insurer, in this case) when the stock is initially offered that serves as a minimum value for which the stock can be sold in that initial offering. Par value has no relation to the market value of a stock and is often set at a low amount, so this common capital stock is not a material item for most insurers (it is only included here to allow for a complete explanation). Certain state regulators have specific requirements for how the par value of shares is established. A separate, similar account is maintained for preferred stock.

Gross Paid in and Contributed Surplus (Line 34)

This account represents amounts received through the sale of stock in excess of the par value for each share. This account also exists only for stock insurers. As shown Table 3, gross paid in and contributed surplus makes up about 30% of the industry surplus, and it is much larger than the common capital stock account.

Unassigned Funds (Line 35)

Unassigned funds represent surplus that has been accumulated over time through retained earnings of the business. For mutual companies, all surplus will generally be reflected in the unassigned funds account because none of those funds were received due to the sale of stock. However, there are some cases in which mutual insurance companies have changed their capital structure through the creation of a mutual holding company. In those situations, the insurance companies do issue the holding company stock and will have common capital stock and gross paid in and contributed surplus accounts. Unassigned funds represented nearly 54% of the industry surplus as of December 31, 2011.

SUMMARY

This chapter has explained the basic structure of the statutory balance sheet and has introduced some of the more significant and relevant accounts. An actuary's involvement is often primarily focused on the loss and LAE reserves, which are the largest liability on the balance sheet, but it is also important for an actuary to understand the bigger picture of an insurer's balance sheet in order to better assess the overall financial health of an insurance company.

In *Chapter 13. Overview of Schedules and Their Purpose*, we will discuss other schedules in the Annual Statement that provide details beyond what we have touched upon here. We will also discuss how that additional detail can be used with the contents of the balance sheet to assess the financial health of an insurance company.

CHAPTER 8. THE STATUTORY INCOME STATEMENT: INCOME AND CHANGES TO SURPLUS

While the balance sheet is of key importance to regulators and the focal point of statutory accounting, the income statement is of equal importance to the ongoing viability of an insurance company. The income statement illustrates the revenue, expenses and net income of an insurance company.

The income statement is presented on the top portion of the Statement of Income on page 4 of the Annual Statement and provides the three sources of income, before federal and foreign income taxes and dividends to policyholders, separately: underwriting income, investment income and other income.

A sample of the statutory income statement for the industry as of December 31, 2011, is presented in Table 4.[19]

TABLE 4[20]

Statement of Income, Income Section: Total U.S. Property/Casualty Insurance Industry SNL Briefing Book — U.S. 2011 Statutory Financials, NAIC Format (USD in 000s)		
Line	Description	Amount
1.	Premiums earned	438,359,503
2.	Losses incurred	293,097,978
3.	Loss adjustment expenses incurred	55,157,144
4.	Other underwriting expenses incurred	123,917,023
5.	Aggregate write-ins for underwriting deductions	1,475,530
6.	Total underwriting deductions	473,647,676
8.	**Underwriting income**	**(35,288,173)**
9.	Net investment income earned	50,972,121
10.	Net realized capital gains (losses) less capital gains tax	7,576,459
11.	**Investment income**	**58,548,034**
12.	Net gain (loss) from agents' or premium balances charged off	(1,270,419)
13.	Finance and service charges not included in premiums	3,179,764
14.	Aggregate write-ins for miscellaneous income	401,701
15.	**Other income**	**2,311,045**
16.	**Net income before dividends to policyholders and federal/foreign income tax**	**25,530,839**
17.	Dividends to policyholders	2,315,009
19.	Federal and foreign income taxes incurred	3,030,418
20.	**Net income**	**20,123,505**

[19] Accessed via SNL.com from SNL Financial LC.

[20] We recognize that line 9 plus line 10 sums to $58,548,580. Further, line 16 minus lines 17 and 18 equals $20,185,412. We have taken the data as accessed from SNL Financial LC without modification.

As shown in Table 4, the net income for the industry during 2011 was $20.1 billion. The subtotals for each source of income show that the industry incurred underwriting losses in 2011, which were more than offset by investment and other income. Each of the three sources of income is discussed further below.

UNDERWRITING INCOME

Underwriting income is the most familiar and relevant source of income to most actuaries. Underwriting income is calculated as earned premium minus loss and loss adjustment expense (LAE) and other underwriting expenses incurred.

Actuaries are typically involved in estimating incurred losses and LAE and possibly in the calculation of earned premium, so these terms should already be familiar. On the income statement, each of the amounts labeled incurred presented also include the ultimate amount of those liabilities that occurred in the current year, and any changes in the ultimate amount of the liabilities that occurred in previous years (as shown in the formula below).

Income statement incurred = Current period ultimate + Change in prior period ultimate

where,

Change in prior period ultimate = (total all periods ultimate at end of period – total all periods ultimate at beginning of period) - current period ultimate

Actuaries may be less familiar with the item labeled "other underwriting expenses incurred." Further discussion on this other underwriting expense category is provided below.

Other Underwriting Expenses Incurred (Line 4)[21]

We already encountered other underwriting expenses briefly during our discussion of the liability for "Other Expenses (Excluding Taxes, Licenses and Fees)" in *Chapter 7. Statutory Balance Sheet*: A Measure of Solvency. The "Other Expenses" account represents all other expenses that were incurred but not paid at the end of the fiscal year, while this line on the income statement represents the total amount of other expenses incurred during the course of the year, whether or not they have already been paid.

As shown in Table 4, the amount of the other underwriting expenses that were incurred by the industry in 2011 was $123.9 billion, which is more than twice the amount of LAE incurred at the time and nearly half the amount of the industry losses incurred. The magnitude of these other underwriting expenses highlights the importance of other underwriting expenses to the profitability of the industry and the importance of ensuring that they are accurately reflected in the financial statements.

[21] Aligns with *IASA* Chapter 8.

Expense accounting requires that expenses be allocated in three ways:

1. NAIC operating expense classifications, which represent 24 types of expenses, some of which have sub-types. These 24 types are listed in the rows Underwriting and Investment Exhibit (U&IE), Part 3. Examples of these expense classifications are "commission and brokerage," "salary and related Items," and "taxes, licenses and fees." It is suggested that the reader review the U&IE, Part 3, now to see the full list of classifications.

2. Expense categories, which are broader groupings of expenses that align with the different operational functions of an insurance company. There are three of these broad categories: LAE, other underwriting expenses and investment expenses. These categories are presented in the columns of the U&IE, Part 3.

3. Line of business, of which there are 33, some of which have sub-lines. These lines of business are listed in the U&IE, Part 2A. The lines of business used for expense reporting are similar to those lines of business used in Schedule P, but not the same.

Each time an insurance company has an expense, the appropriate expense classification needs to be determined and an allocation must be made by line of business and expense category. In some cases, the entire amount of the expense can be specifically identified with one expense classification, within one expense category and for one line of business (for instance, a commission paid on a policy within a specific line of business); however, this is often not the case, such as the salary of an employee who oversees several products and functions. In those instances an allocation of that expense must be made. Some expenses may require several allocation steps.

When an allocation is required, it will be performed based on information that is relevant to that expense. Examples of potential allocation bases are policy counts, which may be appropriate in the case of policy administration expenses; employee headcount, which may be reasonable for supervisors' salaries; or other measures of business or employee activity.

An example of a complex expense allocation would be one related to the rent that is paid for a home office that serves as a center for all operating functions. The allocation process could take place as follows:

- This expense can be specifically identified as the "rent and rent items" expense classification and therefore assigned fully to that classification.

- Because the home office is used for all company functions, its expenses would need to be allocated between all three categories: LAE, other underwriting expenses and investment expenses. One possible approach to this is to allocate the rent to those three categories by headcount of personnel associated with each function.

- The home office is also the base for all lines of business, so the expenses may be allocated to each line of business by premium volume. This allocation to line of business could differ by expense category.

The result of the first two of these allocations can be observed in the U&IE, Part 3, and the line of business allocation is reflected in the Insurance Expense Exhibit, Part 2, which will be discussed in more detail in *Chapter 18. Insurance Expense Exhibit*.

Guidance for allocation of expenses is provided in the NAIC Annual Statement Instructions, and also in the Statements of Statutory Accounting Principles (SSAP) 70, *Allocation of Expenses*. These are the sources of the uniform classifications and categories that are described above, as well as additional allocation rules. In general, the guidance indicates that specific identification of expenses is preferable to allocation but that when allocation is required, it should be apportioned based on pertinent factors or ratios such as premium, number of claims or headcount. The decision to allocate and the factors or ratios that are used when allocation is required will require judgment on the part of a company.

While the topic of expense accounting and specifically other underwriting expenses may seem of questionable relevance to an actuary, it is important to have a basic awareness and knowledge of the topic. The reason for this is twofold.

First, the overall level of company expenses will directly affect the pricing (or the adequacy of pricing) of its insurance products. A company with lower expenses relative to its competitors has the potential to be more competitive and or more profitable. Actuaries can contribute by participating in the planning and control of expenses.

Second, if the relative allocation of expenses across functions and products is not accurate, it can lead to subsidies between products that may obscure the true profitability of those products and lead to inefficient allocation of resources or even anti-selection. An actuary who understands expense allocation can prevent or minimize such subsidies and their consequences by striving to allocate expenses as accurately as possible.

The expense allocation process described above and presented in the U&IE is the driver of the other underwriting expense account on the income statement, as well as other references to expenses elsewhere in the Annual Statement.

INVESTMENT INCOME[22]

Investment income is an important source of income to insurance companies and a unique aspect of an insurer's business relative to other industries. The importance of investment income was already highlighted by the summary of the industry income statement. There we

[22] Aligns with *IASA* Chapter 9.

saw that in 2011 the insurance industry's positive net income was entirely attributable to investment income and not to underwriting income.

Because there is a delay (significant in some cases) between the time insurers receive premiums and the payment of claims, they have an opportunity to earn investment income on those funds. This makes consideration of investment income fundamental to the pricing of insurance products, which is not the case for most other industries.

The investment income item on the income statement consists of the following:

- Net investment income earned
- Net realized capital gain (loss)

Net investment income earned is primarily related to interest and dividends received on investment assets held over the course of the year. Net investment income earned does not include changes to the prices in assets that are held (those are included in net realized capital gain described below). Furthermore, it is recorded on an accrual basis, meaning that it is reflected in the year in which it is earned and not necessarily the year in which the actual cash related to the income is received. The amount of this income is shown net of investment expenses and other costs, but gross of federal income taxes, on the income statement.

Net realized capital gain (loss) generally results from the sale of investments for more or less than original cost, adjusted for the amortization of premiums or accretion of discounts (amortized cost). Realized losses also result from impairment adjustments. Certain investments (primarily common stock) are recorded at fair value. The changes in the value of these investments (unrealized gains (losses)) are not included as income and instead reflected as direct adjustments to surplus. These direct adjustments to surplus are necessary because these items do not flow through net income for the current period, but the surplus must still be adjusted to maintain the assets equal liabilities plus surplus relationship.

In 2011, industry net investment income earned was $51 billion, and the net realized capital gain was $7.6 billion. Detail of both the net investment income and the net realized capital gain (loss) amounts that are shown in the income statement is provided on page 12 of the Annual Statement, which includes the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses). These exhibits provide the detail of both sources of income by asset class. The Exhibit of Net Investment Income also differentiates between the amount of income collected and the amount of income earned in the year and describes the deductions for investment expenses and other costs. The Exhibit of Capital Gains (Losses) shows the split of the gains (losses) between those gains (losses) that were realized on the sale or maturity of an asset and those that were due to impairments (labeled "other realized adjustments").

The details underlying these two exhibits are provided in Schedules A, B, D, DA and DB of the Annual Statement, which describe the assets held in each asset class as of the evaluation date

of the financial statement and the assets that were sold, redeemed or disposed of during the current year.

While property/casualty actuaries are not typically involved in the investment reporting and valuation, they should have a basic understanding of these items due to their significance to product pricing and overall insurer operating results. For that reason, a discussion of the statutory reporting and valuation guidelines for each major asset class is included below. More detail will be provided on bonds and stocks because they represent the vast majority of assets held, but several other asset classes will also be discussed briefly.

Bonds

Bonds represent a majority of the assets held by insurance companies. On the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses), bonds are reported in four categories: U.S. government bonds, bonds exempt from U.S. tax, other bonds (unaffiliated) and bonds of affiliates. The underlying detail is primarily provided in Schedule D, Part 1 (Long-Term Bonds Owned) and Schedule D, Part 4 (Long-Term Bonds Sold, Redeemed or Disposed of). Bonds that mature in one year or less are reported in Schedule DA, Part 1 (Short-Term Investments Owned).

The net investment income earned from bonds, as shown in the Exhibit of Net Investment Income, is based on the following four amounts:

1. Interest received during the year (Schedule D, Part 1, column 20 and Part 4, column 20).
2. Interest due and accrued (Schedule D, Part 1, columns 19 and 20).
3. Current year's (amortization)/accretion (Schedule D, Part 1, column 13 and Part 4, column 12)
4. Interest paid for accrued interest on dividends (Schedule D, Part 3, column 9).

The first of the four items, interest received during the year, represents all coupon payments that were received on bonds held during the year. This includes coupon payment on bonds owned at the end of the year and on bonds that were owned at the beginning of the year but sold, redeemed or disposed of during the year. This is presented on the basis of when the actual interest coupon was actually received, so an adjustment is required to convert it to an accrual basis. This adjustment is made by adding the change in the interest due and accrued account (the second item from above) over the last year to the interest received during the year.

The explanation of the third item above, current year's (amortization)/accretion, requires us to revisit basic bond valuation. Recall that when a bond is purchased, the actual purchase price is usually different from the face value due to the difference between the coupon rate on the bond and the market interest rates at the time of purchase. To provide the buyer with

an effective interest rate equal to the current market interest rate, the bond is sold at either a discount or a premium to the face value. For financial reporting purposes, that discount or premium is then realized as either positive (in the case of a discount) or negative (in the case of a premium) interest income over the life of the bond. This is referred to as either the amortization of the premium or the accretion of the discount and is reported for each bond in Schedule D, Parts 1 and 4.

The following example illustrates the accounting for a bond purchased at a discount. Assume a five-year bond with face value of $100 is purchased for $90. The purchase price is less than the face value because the coupon rate on the bond is less than the current market interest rate. This difference between the face value and purchase price is referred to as a discount, and the amount of the discount is set such that the effective yield on the bond will equal the current market interest rates at the time of purchase. The $10 discount is realized over the remaining five-year duration of the bond as investment income in addition to the actual coupon payments, such that the effective yield in each period also matches the market interest rate at the time of purchase.

The same example can be reversed for bonds that are purchased at premium (when the coupon rate exceeds the market interest rate), and that premium is amortized as negative investment income over the life of the bond to achieve an overall investment income equal to the market interest rate at the time of purchase.

The fourth and final item above, interest paid on accrued interest and dividends, is related to coupon payments that are received on bonds acquired during the year. When a bond is acquired between coupon payments, the buyer of the bond (in this case the insurance company) is required to pay the seller of the bond the portion of the coupon payment that was earned while they owned the bond. This amount is presented on Schedule D, Part 3 (Long-Term Bonds and Stocks Acquired During Current Year), column 9 (Paid for Accrued Interest and Dividends).

Each of these three items (interest received, accrual/amortization of discount/premium, interest due and accrued, and payments for accrued interest on purchases) is reflected in the investment income collected and earned columns in the Exhibit of Net Investment Income.

The other aspect of investment income related to bonds, net realized capital gains (losses), comprises the following components:

- Realized gain (loss) on sale or maturity (Schedule D, Part 4, column16)
- Foreign exchange gain (loss) on disposal (Schedule D, Part 4, column 17)
- Other than temporary impairments recognized (Schedule D, Part 1, column 14 and Part 4, column 13)

Before we discuss these items in more detail, we will first review the basic statutory accounting concepts for bonds. When a bond is purchased, it is recorded at actual cost, including brokerage and other fees. This amount is recorded as the "actual cost" in Schedule D, Part 1, column 7 and Schedule D, Part 4, column 7. In each statutory Annual Statement after the purchase of the bond, the bond is recorded at "adjusted carrying value," which is based on one of two amounts:

- Amortized cost
- The lower of amortized cost and fair value

Amortized cost represents the actual cost of the bond adjusted for the amortization of any premium or discount from the face amount (as described in the paragraphs above). Fair value generally refers to the value that an asset could be sold for in the open market.

For bonds that are rated National Association of Insurance Commissioners (NAIC) 1 and 2 and carried at amortized cost, the adjusted carrying value of the bond is updated each year to reflect the amortization of premium or the accretion of discount. As a result, the adjusted carrying value of the bond will converge with the par value as a bond matures. For bonds that are rated NAIC 3 through 6, the value of the bond is shown as the lesser of fair value or amortized cost. The fair value is provided by the NAIC *Valuation of Securities Manual* for all securities that are owned by insurers. All of this information is summarized on Schedule D, Part 1, including the NAIC designation, actual cost, fair value, par value and book/adjusted carrying value.

To the extent the adjusted carrying value of a bond is adjusted to fair value, the adjustment is considered an unrealized loss and is reflected in Schedule D, Part 1, column 12. Once the bond is sold, the difference between the consideration received and the adjusted carrying value is considered a realized gain or loss and is recorded in Schedule D, Part 4, column 18. Many bonds held by insurance companies are rated NAIC 1 or 2 and held to maturity, so there is never any capital gain or loss over the life of the bond.

Bonds denominated in a foreign currency will also be affected by changes in foreign exchange rates over time. These changes are reflected in the adjusted carrying value but are unrealized until the bond is sold, redeemed or otherwise disposed of. The change in the unrealized amount of this foreign exchange gain or loss is found on Schedule D, Part 1, column 15, and the amount of foreign exchange gain or loss that is realized upon disposal is found on Schedule D, Part 4, column 17.

The sum of the realized gain or loss on disposal and the foreign exchange gain or loss on disposal equals the total gain or loss on disposal, which is shown on Schedule D, Part 4, column 19.

One important exception to the reporting and valuation rule described above relates to the third source of the net realized capital gains and losses, which is referred to as "other than temporary impairments recognized." In general an impairment occurs when it is deemed probable that the insurer will not collect all amounts due on a debt security. Whether or not impairment is temporary is a subjective judgment of the company. Impairments can occur on bonds with any NAIC rating, and they result in the realized capital losses even though a bond has not been sold, redeemed or disposed.

The total realized capital gain or loss for a year is calculated in the Exhibit of Capital Gains (Losses). Column 1 represents the "Realized Gain (Loss) On Sales or Maturity," which is calculated in Schedule D, Part 4, and shown in column 18 of that exhibit. Column 2 is labeled "Other Realized Adjustments" and includes the foreign exchange gain (loss) on disposal and other than temporary impairments recognized in the first year.

Stocks

Like bonds, investment income from stocks comprises investment income earned and realized capital gains.

Preferred stocks and common stocks are reported on separate lines on the Exhibit of Net Investment Income and the Exhibit of Capital Gains (Losses), and they have separate supporting schedules, Schedule D, Part 2, Section 1 and Section 2, respectively. Disposals of preferred and common stocks are reflected in Schedule D, Part 4.

Investment income for stocks is simply the amount of dividends received during the year plus the change in the accrual for dividends declared but unpaid (dividends are accrued on the ex-dividend date). These dividends are included in Schedule D, Part 2-Section 2, column 11 for stocks owned at year end and in Schedule D, Parts 4 and 5, column 20 for stocks sold during the year.

When either common stocks or preferred stocks are purchased, the actual cost plus any commissions or taxes becomes the initial carrying value. Subsequently, the valuation of preferred stocks and common stocks differ, so each is discussed separately.

Common stocks of unaffiliated companies listed on the major U.S. exchanges (NYSE and NASDAQ) are simply recorded at fair value. Changes to fair value after purchase are recorded as unrealized valuation increases (decreases) in Schedule D, Part 2, Section 2, column 13. When a stock (common or preferred) is disposed of, the difference between the consideration received and the original cost is recorded as a realized gain (loss) on disposal and a foreign exchange gain (loss) on disposal (if applicable) in Schedule D, Part 4, columns 17 and 18.

The rules governing the accounting for investments in subsidiaries and controlled and affiliated entities are complex and beyond the scope of this publication. A brief description of the accounting for investments in insurance company affiliates is discussed in the RBC

chapter of this publication (see *Chapter 19. Risk-Based Capital*), where accounting background is needed on the accounting for determination of the asset risk charge.

The valuation of preferred stock of unaffiliated entities is dictated by the form of the instrument and the ratings assigned by the NAIC Securities Valuation Office. The two common forms of preferred stock are redeemable and perpetual preferred stock. Redeemable preferred stock, also known as callable preferred stock, is preferred stock that is redeemable at the option of the issuer at a specified maturity date or after a specific period of notice, for a preset price. Perpetual preferred stock is preferred stock with no maturity date that cannot be redeemed by the issuer. For redeemable preferred stock, the highest two rating categories are recorded at the original purchase price plus acquisition costs; for perpetual preferred stock, the highest two rating categories are recorded at fair value; for redeemable and perpetual preferred stock designated, the lower four rating categories are recorded at the lower of book or fair value.

As with fair value changes, market value changes to common and preferred stock after purchase are also shown in Schedule D, Part 2, Section 2, column 13 as unrealized valuation increases (decreases). Again, when a stock is disposed of, the difference between the consideration received and the original cost is recorded in Schedule D, Part 4, columns 17 and 18 as a realized gain (loss) on disposal and a foreign exchange gain (loss) on disposal (if applicable).

Both common stocks and preferred stocks are subject to impairment charges if there is a decline in fair value that is deemed to be "other than temporary" by the company. This determination must be made by the company based on available information (e.g., published reports, bankruptcy notifications). When impairment is made, it is recorded in Schedule D, Part 2, Section 1, column 17 and Schedule D, Part 2, Section 2, column 14 (as well as Part 4 for stocks that are disposed of during the year). Impairments made in a given year are included in the "Other Realized Adjustments" of the Exhibit of Capital Gains.

Each component of investment income from stocks is included in the Exhibit of Net Investment Income (page 12). Dividends received plus the change in dividends declared but unpaid are shown in the Exhibit of Net Investment income. In the Exhibit of Capital Gains (Losses), the realized gain or loss on disposal is shown in column 1, and the realized foreign exchange gain (loss) on disposal and other than temporary impairments are shown in column 2.

Cash, Cash Equivalents and Short-Term Investments

This class includes assets that are immediately convertible to cash and have an original maturity of one year or less. Short-term investments are reported in Schedule DA, Part 1, cash is reported in Schedule E, Part 1, and cash equivalents are reported in Schedule E, Part 2.

The short-term investments presented in Schedule DA, Part 1 are composed of bonds or other securities with a maturity of one year or less (at acquisition) and follow the same reporting and valuation rules as the long-term bonds. When a short-term bond or other investment is purchased, the security is recorded at cost and the premium or discount (if any) is amortized or accreted until maturity. Other than temporary impairments are also possible, though they are less common given the short duration of these investments.

The reporting and valuation of cash and cash equivalents is similar but relatively simpler than short-term investments, as evidenced by the fewer columns that are included in Schedule E, Parts 1 and 2 relative to Schedule DA.

Derivatives

Derivatives are financial contracts between two parties for which the value depends on the performance of other assets or variables. While derivatives are not a major asset class for most property/casualty insurance companies, they are becoming more common, and they are of heightened importance due to the financial crisis that occurred in the late 2000s. During the financial crisis, one large insurance group nearly collapsed due to derivatives that had been sold by one of its units. Had these additional disclosures that are now required in this exhibit been available at that time, that near-collapse may have been avoided.

A list of outstanding derivatives owned, sold ("written"), and terminated during the year is provided in Schedule DB. Companies that are not involved in any open derivatives may omit Schedule DB.

Schedule DB provides the number of contracts for each derivative and the notional amount, which represents the number of units of the underlying asset that are involved. The original trade date and the maturity or expiration date are also provided. The two prices listed are the transaction price, which is the price that the company agreed to buy or sell at, and the reporting date price, which is the current price.

One common reason a company may buy or sell derivatives is to hedge, or offset, the exposure they have to changes in price for an underlying asset or variable, such as an interest rate. For this reason, Schedule DB includes information on the item that is hedged with each derivative position and on the type of risk being hedged.

If a derivative position is held for hedging purposes and a company can demonstrate that the hedge has sufficiently reduced the risk related to the specific underlying asset or assets (known as a "highly effective" hedge), then that derivative may qualify for hedge accounting. Under hedge accounting, the derivative is accounted for in the same way as the asset that is hedged, which allows for any changes in the value of the hedged asset and the derivative to offset (or be unrecorded in cases where the hedged item is recorded at amortized cost). For instance, if an interest rate swap is held to specifically hedge the value of a bond portfolio and

that interest rate swap qualifies as a highly effective hedge, then that interest rate swap can be accounted for on an amortized basis to effectively neutralize any changes in the value of the bond portfolio.

If a derivative no longer qualifies for hedge accounting (i.e., is no longer highly effective), then the mark-to-market accounting method should be used, and any changes in the fair value of the derivative should be recorded as unrealized gains (losses) directly to surplus in the current period. The accounting for derivatives used in income-generation transactions depends on the nature of the transaction and the accounting for the covering asset or underlying interest.

Schedule E is also related to derivatives and lists the counterparty exposure for all derivatives that are open at year-end. Counterparty is the person or institution on the other side of a transaction. This is important because it provides information to the regulators and any other users of the financial statements regarding any concentration of exposure to a specific counterparty. If the exposure to a counterparty becomes large enough that it is material relative to the surplus of a company, it should be considered as a potential warning sign.

Derivative accounting is very complex and beyond the scope of this publication. More detail regarding derivative accounting can be found in SSAP 86, *Accounting for Derivative Instruments and Hedging Activities*.

Other Sources of Investment Income

Although we have covered the largest and most common sources of investment income, there are other sources. For additional information on those other sources, or for additional detail regarding any of the sources discussed here, refer to the corresponding statutory accounting guidance.

Investment Guidelines

As discussed, there is a variety of investment asset classes available to insurers, and there is a wide range of specific assets within each class. So when purchasing a bond, an insurer needs to make decisions on the type of issuer (e.g., government, corporate, asset-backed), industry, quality, maturity and country. Each company will make these decisions based on a set of investment guidelines, which are governed by state investment laws applicable to insurers. The various states have established investment laws, which provide guidance and limits regarding the investments allowable by the insurers domiciled in their jurisdiction. Although the NAIC has established model laws governing various aspects of insurers' operations (including investments), the laws adopted by individual states may vary from those model laws. For purposes of this discussion, we will focus on the NAIC Model Investment

Law.[23] The NAIC Model Investment Law allows for two alternative types of investment guidelines, which are referred to as Defined Limits and Prudent Person.

The Defined Limit system of investment guidelines follows a rule-based approach and prescribes specific quantitative limits for the invested assets that a company may hold. Examples of some of the prescribed limits include the following:

- 5% limit of admitted assets with any single issuer (exceptions for government bonds)
- 1% limit of admitted assets with any single issuer with rating of NAIC 3
- 0.5% limit of admitted assets with any single issuer with rating of NAIC 4 or lower
- 20% limit of admitted assets in all securities rated NAIC 3 or lower
- 10% limit of admitted assets in all securities rated NAIC 4 or lower
- 5% limit of admitted assets in all securities rated NAIC 5 or lower
- 1% limit of admitted assets in all securities rated NAIC 6
- 25% limit of admitted assets or 100% of surplus in all common stocks

The Prudent Person system of investment guidelines follows a principles-based approach and requires an insurance company to develop its own investment guidelines. If a company chooses to use the Prudent Person approach, it should develop the investment guidelines with the protection of the policyholder in mind, and it should consider the specific investment expertise and resources available.

Measuring Investment Performance

Although investment income is a critical aspect of an insurer's profitability, it can be difficult to measure investment performance and make comparisons between insurance companies. Several factors to consider are the size of the asset base of a company, the level of risk inherent in a company's investment portfolio and the impact of taxes on a company's investment income. Each of these considerations will be discussed below.

It may be tempting to compare the amount of investment income from one company to another or to create the ratio of investment income to written or earned premium. Neither of these approaches is an accurate measure of investment performance because they ignore the size of a company's invested assets. All things being equal, a company with 10 times the invested assets of another company would also be expected to generate 10 times the investment income. For that reason, one metric to consider is the ratio of the investment income for the year to the average invested assets.

That ratio will provide a basic comparison between two companies and how much investment income they are generating relative to their invested assets. However, this ratio does not consider the inherent risk to the assets that are being held. If one company has a significantly

[23] NAIC, *Model Regulation Service – January 2012, Index and Model Description*, MDL-280, 282, 283, and 340, http://www.naic.org/documents/committees_models_index.pdf, 2012.

higher percentage of its assets in common stocks or lower-rated bonds, it would be expected to achieve a higher investment return during a good year, but the level of risk is significantly higher. While there may not be a single ratio or metric that measures this inherent level of risk, it is at least possible to qualitatively compare the types of assets held by two companies to see if there are significant differences.

Measurement and comparison of investment performance is also difficult due to taxes. As discussed earlier in this chapter, net investment income earned is presented on the income statement before the effects of federal income taxes. On the other hand, net realized capital gain (loss) is presented after capital gains tax. Two companies that had the same net investment income earned may be subject to different taxation. The full implications of the impact of taxes on investment income are beyond the scope of this publication, but a user of the financial statements should be aware of this potential difference and seek input from a tax professional as needed.

OTHER INCOME

As shown in the summary of the industry income statement, the other income category is relatively small compared to the other two categories. For that reason, only a few of the significant sources of other income will be discussed below. Although they are not technically considered to be part of other income, dividends to policyholders and federal and foreign income taxes are also discussed below because they are part of the consideration of net income.

Net Gain (Loss) from Agents' or Premium Balances Charged Off (Line 12)

In *Chapter 7. Statutory Balance Sheet*: A Measure of Solvency, we discussed the assets related to uncollected and deferred agents' balances. If a company determines that a portion of those balances will not be collected, those balances should be charged off as a loss and are recorded as an expense under this category in other income. Conversely, if an agents' balance that was previously written off is recovered, that recovery would be included as a gain in this category. Losses can be used to offset gains that occur during the same period.

Finance and Service Charges not Included in Premiums (Line 13)

Insurers will often offer financing or payment plans to the insured that allow the insured to spread out premium payment over time. Typically, the insured will pay an additional flat service charge to pay through these financing or payment plans. Those service charges are not recorded as a part of written or earned premium and are instead included in this category under other income.

Aggregate Write-ins for Miscellaneous Income (Line 14)

While the amounts included as miscellaneous write-ins are not usually material, several of the common entries are the following:

- Gain or Loss on Sale of Equipment: When furniture, equipment or automobiles are sold, the sale price may differ from the current depreciated cost. That difference may be recorded as either a gain or a loss under other income.
- Retroactive Reinsurance: An insurer may purchase reinsurance on existing liabilities, and the reinsurance premium paid may be more or less than the previously recorded value of the liabilities transferred. That gain or loss is recorded as other income.
- Gain or Loss on Foreign Exchange: When payments are made or received in a foreign currency, the ultimate settlement of the payment may be at a different exchange rate than the exchange rate at which the payment was originally recorded, and the resulting gain or loss is recorded as other income. This does not include changes in investment income due to foreign exchange, which were already discussed.
- Corporate Expense: Some insurers will record some corporate expenses that are not allocable to underwriting or investments, such as national advertising, to other expenses.
- Fines and Penalties of Regulatory Authorities: As per the Annual Statement Instructions, all fines and penalties imposed by regulatory authorities must be disclosed separately, regardless of materiality.

Dividends to Policyholders (Line 17)

The board of directors of a mutual insurance company may elect to pay a dividend to the policyholders. A dividend is effectively a return of a portion of the premium that was originally paid by the policyholder, and for a dividend to be paid, there are typically state requirements. When the decision is made to pay a dividend, it is considered to have been "declared," and payment won't actually be issued until a later date.

This item on the income statement includes dividends that were actually paid plus the change in accrued dividends.

Federal and Foreign Income Taxes Incurred (Line 19)

All foreign and federal income taxes that are incurred during the current year, including amounts related to prior years, are recorded on this line. This amount of income taxes incurred represents an estimate of the current income taxes incurred during the reporting period and excludes any amounts that would be deferred to later years. Further detail on taxation appears in *Chapter 26. Taxation in the U.S.*.

CHAPTER 9. CAPITAL AND SURPLUS ACCOUNT

In addition to various income items that have already been discussed, the Statement of Income within the Annual Statement also includes a section referred to as the "Capital and Surplus Account." This section is important because it reflects certain changes in surplus that are not recorded in the income statement and it reconciles the beginning surplus to the ending surplus for the reporting period.

In its simplest form, the key components of the Capital and Surplus Account are listed in Table 5 as follows:

Current Year Surplus (line 39) =
- Prior Year Surplus (line 21)
- \+ Current Year's Net Income (line 22)
- \+ Other Surplus Changes (lines 24 through 31)
- \+ Additional Capital Contributions (lines 32 and 33)
- \+ Stockholder Dividends (line 35)[24]

Under Statutory Accounting Principles, certain transactions are recorded directly to surplus, so the Other Surplus Changes component includes a number of important subcomponents. Table 5 is an excerpt of the Capital and Surplus Account for the U.S. property/casualty insurance industry as of December 31, 2011.[25]

[24] Stockholder dividends represent a charge to surplus for amounts paid during the year plus the change in the amount of dividends declared but unpaid during the year. These amounts are shown as a negative number in line 35 of the Capital and Surplus Account and therefore added, as a negative number, to calculate current year surplus. Table 5 demonstrates this calculation.

[25] Accessed via SNL.com by SNL Financial LC.

TABLE 5[26]

Statement of Income, Capital and Surplus Account Section: Total U.S. Property/Casualty Insurance Industry SNL Briefing Book — U.S. 2011 Statutory Financials, NAIC Format (USD in 000s)		
Line	Description	Amount
21.	Surplus as of December 31 of prior year	571,059,427
22.	Net income	20,123,505
24.	Change in net unrealized capital gains (losses) less capital gains tax	(3,233,712)
25.	Change in net unrealized foreign exchange capital gain (loss)	(380,971)
26.	Change in net deferred income tax	1,074,133
27.	Change in nonadmitted assets	(1,446,063)
28.	Change in provision for reinsurance	262,032
31.	Cumulative effect of changes in accounting principles	(15,121)
32.	Capital changes	30,609
33.	Surplus adjustments	2,896,742
35.	Dividends to stockholders	(27,695,087)
37.	Aggregate write-ins for gains or losses to surplus	365,756
**	Other adjustments to surplus (see footnote)	(947,528)
38.	Changes to surplus for the year (lines 22 through 37 and **)	(8,965,705)
39.	**Surplus as regards policyholders, December 31 current year**	**562,093,722**

The first item of Table 5, surplus as of December 31 of prior year, is taken directly from the Capital and Surplus Account from the prior year. Net income comes from the Statement of Income. The remaining rows describe the direct adjustments to surplus. An explanation of some of the important adjustments is below.

Change in Unrealized Capital Gains (Losses) (Line 24)

We previously discussed the concept of realized and unrealized capital gains in the discussion of investments and investment income. Capital gains (losses) occur when the carrying value of an asset changes, but those capital gains (losses) are only realized when an asset is either disposed of or impaired.

Recall that in the investment income section of the Statement of Income, realized capital gains (losses) are recorded in income, but unrealized capital gains (losses) are not. Unrealized capital gains (losses) occur when the fair values of investments carried at fair value change during the reporting period. Because these unrealized capital gains (losses) are reflected in

[26] The amount contained in the line denoted by ** in Table 5 of $(947,528) is equal to the sum of lines 23, 29, 30, 34 and 36 from the 2011 Statement of Income for the Total U.S. Property/Casualty Insurance Industry accessed via SNL Financial LC, plus a balancing item. The balancing item was added by the authors so that line 38 would reconcile to the amount provided in the dataset accessed via SNL Financial LC. The addition of a balancing item was for this table only and is not a standard practice.

the balance sheet but not in net income, an adjustment to surplus is required to maintain the Assets – Liabilities = Surplus relationship.

Because the current year's surplus is being calculated with the prior year's surplus as a starting point, the required adjustment is the *change in* net unrealized capital gains (losses) relative to the prior year, not the absolute amount of unrealized capital gains for the current year. This amount can be found in column 4 of the Exhibit of Capital Gains (Losses).

Unrealized capital gains (losses) most frequently occur with respect to stock holdings that are held at fair value because any change in the fair value from year to year affects capital gains (losses). Bonds may also produce unrealized capital gains, but this would typically only occur when a bond is rated National Association of Insurance Commissioners (NAIC) 3 or lower and is therefore recorded at fair value. Perpetual preferred stock and redeemable preferred stock that is rated in the four lowest rating categories could also produce unrealized gains since they also may be recorded at fair value.

Change in Net Unrealized Foreign Exchange Capital Gains (Losses) (Line 25)

This item is similar to the change in unrealized capital gains (losses), but it is specifically related to unrealized capital gains (losses) due to changes in the foreign exchange rate. When an asset is purchased in a foreign currency, any subsequent change in value due to foreign exchange rates as long as that asset is held are considered to be unrealized capital gains (losses). This amount can be found in column 5 of the Exhibit of Capital Gains.

Change in Net Deferred Income Tax (Line 26)

Deferred tax assets (DTAs) and deferred tax liabilities (DTLs) were already discussed in the previous discussion of the balance sheet (*Chapter 7. Statutory Balance Sheet*: A Measure of Solvency). DTAs and DTLs can arise for a variety of reasons, but the most common are differences in statutory and tax accounting (such as in the discounting of loss reserves, unrealized gains/losses and unrealized foreign exchange gains/losses) and carryforward of previous operating losses to future tax years. DTAs are only considered admitted assets if a strict admissibility test is met. All surplus adjustments are recorded net of deferred taxes if there is a difference in the treatment of the item for statutory accounting and tax purposes. Similar to unrealized capital gains, net DTAs affect the balance sheet but do not flow through to income. As a result, a direct adjustment is required to surplus to maintain the equality of Assets – Liabilities = Surplus. The change in deferred taxes is determined before consideration of the nonadmitted portion because the change in nonadmitted DTAs is captured with all the other nonadmitted assets.

Change in Nonadmitted Assets (Line 27)

The concept of nonadmitted assets was introduced in the previous discussion of the balance sheet. Nonadmitted assets are assets that are not allowed to be considered part of surplus for

the purpose of statutory accounting. This creates a violation of the Assets – Liabilities = Surplus relationship.

As with the previous items, the adjustment required is based on the *change* in nonadmitted assets relative to the prior year, not the current absolute amount. There is a specific exhibit in the Annual Statement, the Exhibit of Nonadmitted Assets (page 13 of the 2011 Annual Statement), which calculates the change in nonadmitted assets relative to last year by asset class and in total. The total change in nonadmitted assets from that exhibit is the source for the amount used as the change in nonadmitted assets in the Capital and Surplus Account.

Change in Provision for Reinsurance (Line 28)

Like nonadmitted assets, the provision for reinsurance is a concept that reduces surplus and is unique to statutory accounting. While nonadmitted assets are essentially treated as assets that are excluded from surplus, the provision for reinsurance is treated as an additional liability on the balance sheet (though no real liability exists). The provision for reinsurance is included on the balance sheet, but it does not flow through to the Statement of Income, which is why a direct adjustment to surplus is required.

The Liabilities page of the balance sheet shows the current year and the past year provision for reinsurance, so change in the provision for reinsurance can be calculated from those amounts. The amount of the change in the provision for reinsurance is included in the Capital and Surplus Account.

Cumulative Effect of Changes in Accounting Principles (Line 31)

Sometimes a company must adopt changes in accounting principles, either due to new accounting guidance, or a change in accounting policy. When such a change occurs, a company must determine the cumulative effect of the change (as if the accounting principle had always been in place) as of the beginning of the reporting period the change is made. The cumulative effect of the change is recorded as a direct adjustment to surplus.

Although an entry for a cumulative effect of changes in accounting principles could be required for many reasons, here are two examples:

- Anticipated salvage and subrogation: Companies have the option to record unpaid losses net of anticipated salvage and subrogation. When a company elects to change the recording from gross of salvage and subrogation to net of salvage and subrogation, the cumulative effect of this change should be reported here.
- Tabular discounting: When companies record loss reserves for life pension reserves, they have the option to discount for interest and mortality according to a prescribed actuarial table and interest rate. This is referred to as tabular discounting. When a

company makes a change in its use of tabular discounting, the cumulative impact of that change should be recorded here.

Capital Changes and Surplus Adjustments (Lines 32 and 33)

The lines for capital changes and surplus adjustments primarily describe inflows and outflows of capital from the new issuance of stock or return of capital, as well as transfers from surplus to capital when stock dividends are issued. When new stock is issued, the portion of the proceeds related to the par value of that stock is recorded as paid-in capital on line 32.1. The portion of the proceeds in excess of the par value is recorded as paid-in surplus on line 33.1.

Dividends to Stockholders (Line 35)

The board of directors of an insurance company may elect to pay a dividend to the stockholders, which serves as a return on the stockholders' investment. Stockholder dividends may only be paid out of unassigned surplus, which is surplus that is not assigned to the par value or paid in value of stock, special surplus funds, surplus notes or treasury stock. There are also specific state requirements that must be met for a stockholder's dividend to be paid.

The amount shown as dividends to stockholders equals the actual amount paid during the year plus the change in the amount of dividends declared but unpaid during the year.

SUMMARY

This section described the three sources of income on the Statement of Income (underwriting, investment and other) and discussed the Capital and Surplus Account within the Statement of Income, where total change in surplus is determined.

While actuaries are most familiar with the aspects relating to underwriting income, they should also be familiar with investment income, given the significance of investment income to the pricing and profitability of an insurer. Understanding the various items that affect the change in surplus is also important because this not only provides the link between the profitability and the solvency of a company (or the income statement and the balance sheet), but it also highlights several direct adjustments to surplus that may require input from an actuary.

CHAPTER 10. NOTES TO FINANCIAL STATEMENTS

We have now covered the numerical aspects of three of the primary financial statements: the balance sheet, income statement, and statement of capital and surplus. For some of the balances, Statutory Accounting Principles (SAP) requires additional qualitative or quantitative information in order to more fully portray the financial condition of an insurer. The Notes to Financial Statements include some of this additional qualitative and quantitative information.

This publication will focus on specific notes that often require direct involvement by actuaries and the notes that are potentially relevant to actuaries. The notes within each of those two categories are described below:

- Notes often requiring direct involvement by actuaries:
  - Reinsurance (23)
  - Change in incurred loss and loss adjustment expense (LAE) (25)
  - Premium deficiency reserves (30)
  - Discounting of liabilities for unpaid loss and LAE (32)
  - Asbestos/environmental reserves (33)
- Notes that are potentially relevant to actuaries:
  - Summary of significant accounting policies (1)
  - Events subsequent (22)
  - Intercompany pooling (26)
  - Structured settlements (27)
  - High deductibles (31)

The numbers listed next to each note above are the numbers corresponding to that note in the 2011 Notes to Financial Statements included in the Annual Statement Blank. These numbers may change from year to year due to the addition or subtraction of the notes that are required, so these numbers will not be used in the rest of this discussion. Examples will be drawn from the 2011 Notes to Financial Statements for Fictitious (referred to as the 2011 Fictitious Notes). It is also suggested that the reader review an example of the Notes to Financial Statements from a current insurance company Annual Statement as they review this section.[27]

For each of the notes described, the following information will be provided:

- Information contained in the note
- Importance of the note to actuaries
- Example of information from the 2011 Fictitious Notes

[27] The Notes to the Financial Statements are included only in individual company Annual Statements, not in group Annual Statements.

Readers seeking more detail on any notes listed above or on other notes to financial statements can refer to either the National Association of Insurance Commissioners (NAIC) Annual Statement Instructions or the paper *Notes to the NAIC Property/Casualty Annual Statement* by Sholom Feldblum and Ralph Blanchard (October 2010).

NOTES OFTEN REQUIRING DIRECT INVOLVEMENT BY ACTUARIES

These five notes typically require direct input from the actuaries at an insurance company, though in each case the management of the company is ultimately responsible (and in some cases the actuary may be a member of management). Because actuaries will likely be the primary source of input in these cases, readers should review these notes in detail and understand what information is needed to complete them.

Reinsurance

The loss and LAE reserve liabilities on the balance sheet and the underwriting income on the income statement are expressed net of reinsurance. Given that reinsurance can significantly lower the loss and LAE reserves on the balance sheet and affect the level of surplus, disclosures regarding the reinsurance in place are important to assessing the financial health of a company. Actuaries typically estimate the ceded reserves on reinsurance contracts and are therefore directly involved in the preparation of this note.

In particular, it is important to understand the potential credit risk associated with the assumed reinsurance recoverables (the risk that the reinsurer will not pay). This note provides information on specific liabilities for which the credit risk may be heightened, such as unsecured recoverables, recoverables in dispute and recoverables that have been deemed uncollectible.

In addition to the assessment of credit risk, there are also some specific accounting rules related to reinsurance that require additional disclosure. The note includes several of these matters, namely the commutation of ceded reinsurance, retroactive reinsurance, reinsurance accounted for as a deposit and run-off agreements.

There are eight sections of this note labeled A through H. A brief summary is provided on each of these sections:

- Unsecured Reinsurance Recoverables (Section A): The credit risk related to recoverables with a specific reinsurer is often mitigated by the reinsured having access to a letter of credit, trust agreement or funds withheld. This note discloses reinsurers for which no such security exists, but only in cases where the recoverable from that reinsurer exceeds 3% of the reporting entity's (i.e., the reinsured's) policyholder surplus. The mention of a reinsurer in this note is not necessarily a problem because those reinsurers may be highly rated and financially sound. The

amounts shown for each include paid losses billed but not yet collected, ceded reserves and ceded unearned premium.

- Reinsurance Recoverables in Dispute (Section B): Even when a recoverable is secured, it is possible for a reinsurer to dispute (or refuse to pay) a recoverable. A reinsurer may dispute either because they are unwilling to pay due to a disagreement on the coverage or amount or because they are unable to pay due to insolvency. A recoverable is considered to be in dispute once a formal written refusal to pay is received from the reinsurer. In addition to identifying a credit risk, recoverables in dispute might represent attempts by a financially troubled insurer to over-recover from reinsurers.

- Reinsurance Assumed and Ceded (Section C): Although unclear from the vague naming, this section includes information on ceding commissions to reinsurers related to the ceded unearned premium reserve. These ceding commissions received from reinsurers are treated as revenue by the insurer and therefore benefit the insurers' surplus position. This section helps regulators to identify situations where an insurer may be abusing ceding commissions to artificially enhance its surplus position, and it provides information on ceding commissions that would need to be returned in the event of cancellation. Specific disclosure is also required for contingent ceding commissions.

- Uncollectible Reinsurance (Section D): If an insurer deems that it is unlikely to collect a specific reinsurance recoverable, it must write off that recoverable as uncollectible and treat it as an expense. This section of the note includes a description of any recoverables that were written off as uncollectible during the course of the year. The disclosures in this note may help an actuary or other user of the financial statements to assess provisions set aside for future uncollectible reinsurance, which is reflected in the Provision for Reinsurance derived in Schedule F.

- Commutation of Ceded Reinsurance (Section E): A commutation is a "transaction which results in the complete and final settlement and discharge of all, or the commuted portion thereof, present and future obligations between the parties arising out of a reinsurance agreement."[28] This note requires disclosure of any commutations that occurred during the year. This information is important to a user of the financial statements because a commutation may cause a distortion to the income statement and balance sheet because the commutation payment received from the reinsurer may be reflected as a negative paid loss and the net loss reserves may increase to reflect the elimination of the reinsurance.

[28] SSAP 62.

- Retroactive Reinsurance (Section F): Retroactive reinsurance refers to reinsurance that is purchased for liabilities that occurred prior to the effective date of the reinsurance contract. Retroactive reinsurance must be accounted for differently than normal prospective reinsurance to avoid distortion of the balance sheet and income statement. Instead of reducing the net loss reserves, retroactive reinsurance reserves are recorded separately as a write-in item on the balance sheet with any gain recorded in the income statement and as a restricted special surplus amount. This section of the note includes disclosure of any retroactive reinsurance, including reserves transferred, consideration paid or received, paid losses reimbursed or recovered, special surplus generated, and other reinsurers involved in the transaction. This section allows a user of the financial statements to verify that retroactive reinsurance is being accurately accounted for and to understand its impact on the financial statements.

- Reinsurance Accounted for as a Deposit (Section G): To be accounted for as reinsurance, a reinsurance contract must meet certain risk transfer criteria. When a reinsurance contract does not qualify for reinsurance accounting, it must be accounted for as a deposit. This means that it is directly accounted for as a deposit asset or liability (depending on if amounts are owed from or to, respectively, other parties under the contract), instead of flowing through underwriting income. If a company has any reinsurance contracts that are accounted for as deposits, a schedule showing the historical changes to the balance since inception of each contract is included.

- Disclosures for the Transfer of Property Casualty Run-off Agreements (Section H): Run-off agreements are reinsurance agreements intended to transfer the risks and benefits of a specific line of business or market segment that is no longer actively marketed by the transferring insurer to a third party. This third party is often another insurance or reinsurance company. If certain criteria are met, a run-off agreement can be accounted for differently than is typically required for retroactive reinsurance. If these criteria are met, the transferring entity records the consideration paid to the assuming entity as a paid loss. If the consideration paid by the transferring entity is less than the loss reserves transferred, the difference is recorded by the ceding entity as a decrease in losses incurred. As noted above, retroactive reinsurance that is not considered a run-off agreement is recorded as a separate item on the balance sheet with no reduction in incurred losses at the time of the transaction.

In summary, this note is helpful to an actuary or other user of the financial statements because it identifies potential credit risks (Sections A, B and D) and identifies types of reinsurance that are subject to specific accounting treatment (Sections C, E, F, G and H). For the sections related to credit risk (A, B and D), the user of the financial statements may ask the following kinds of questions if material balances exist:

- Section A (Unsecured Recoverables): Why wasn't security provided? Are there concerns of the financial health of either the reinsurer or the reinsured? Was there a catastrophe that led to a large amount of recoverables? Are all of these unsecured recoverables concentrated with one reinsurer?

- Section B (Recoverables in Dispute): What is the point of disagreement with the reinsurer? Is the amount in dispute material to either the reinsured or the reinsurer? Are there legal opinions available on the validity of each side's claim?

- Section D (Uncollectible Reinsurance): What was the reason for the uncollectible reinsurance? Could other outstanding recoverables also be uncollectible in the future for the same or similar reasons? How long did it take the company to write off any uncollectible reinsurance that was disclosed?

The disclosures in this note are of specific interest to an actuary who is opining on a company's loss reserves because several of these items are referred to explicitly in the Statement of Actuarial Opinion (SAO).

A review of the 2011 Fictitious Notes indicates that Fictitious provided disclosures related to unsecured reinsurance, commissions and retroactive reinsurance. The other items were not applicable for the 2011 year.

Change in Incurred Loss and Loss Adjustment Expense

The total incurred loss and LAE for a year can be thought of in two categories: (1) loss and LAE that were incurred on liabilities occurring during the current accident year and (2) any changes in incurred loss and LAE from previous accident years. This note relates only to the second of these two items. The content of this note should include the amount of the change (i.e., reserve strengthening or weakening) in liabilities for previous accident years, the segments or lines of business that led to that change, and the reason for the change.

The importance of this note to the financial health of an insurance company is two-fold. First, the existence of a material change in prior accident years' incurred losses and LAE affects the current year's underwriting income and could obscure the true underlying experience of the current in-force business. A company that achieved positive underwriting income solely as a result of decreases to prior years' loss and LAE estimates may have profitability issues on their current business.

Second, recurring material changes in prior accident year incurred loss and LAE may be indicative of a bias or problem with a company's reserving process. For instance, if a company consistently experiences significant decreases in their estimates of prior accident years' losses, then there may be inherent conservatism to the company's process for establishing

loss and LAE reserves. Schedule P provides additional information that may assist in this assessment, and it will be discussed in more detail in *Chapter 15. Schedule P*.

Actuaries should be familiar with the required content of this note so that they are prepared to provide input to management. Also, when reviewing a company's financial statements, actuaries may be in the best position to identify one of the two problems noted above. This note should be consistent to the similar note included in the annual Generally Accepted Accounting Principles financial statements and also to the one-year development column from Schedule P, Part 2 (with the exception of Adjusting & Other Loss Adjustment Expenses, which are included in this note but not in Schedule P, Part 2).

Finally, if the actuary is the Appointed Actuary for the company, the actuary may be called on to understand the difference in estimates underlying the loss reserves since the prior year's estimates and comment on those changes in the Appointed Actuary's Statement of Actuarial Opinion. For that reason, the actuary needs to be aware of the content of this note.

In the case of the 2011 Fictitious Notes, it is disclosed that the prior year-end total loss and LAE reserves developed favorably by $875,000, and several specific segments were cited as the major drivers of this favorable development. According to Fictitious' income statement, the company's net income in 2011 was $2.2 million. This tells the user of the financial statements that the favorable reserve development was a significant factor in the financial results of the company for the year. *Chapter 12. Five-Year Historical Data Exhibit* will provide guidance on how to assess whether this favorable development has been occurring consistently over time.

Premium Deficiency Reserves

Premium deficiency reserves must be recorded when the unearned premium of in-force business is not sufficient to cover the losses, LAE and maintenance expenses that will arise as that premium is earned. Companies have the option to consider investment income when performing this calculation. Also, before performing the calculation, the business should be grouped in a manner that is consistent with how it is marketed, serviced and measured.

Most insurance policies sold by insurance companies are priced with rates that are greater than the expected losses and expenses, especially after consideration of investment income. Furthermore, if there is a segment of the business that is underpriced, it may be a part of a larger grouping where the deficiency in that segment is offset by other more profitable segments. For these reasons, the premium deficiency reserve will be zero for a majority of companies. However, there are cases where a non-zero premium deficiency reserve exists due to regulatory, competitive or other conditions that led to inadequate rates.

When a non-zero premium deficiency reserve does exist, a company may record it as either a write-in liability or a part of the unearned premium reserve on the balance sheet. When it is

recorded as a part of the total unearned premium reserve liability, Notes to Financial Statements is the only way to identify whether a premium deficiency reserve exists and the amount of the reserve.

In the note relating to premium deficiency reserves, the company must disclose the amount of the premium deficiency reserve. The company also needs to disclose whether investment income was considered in the determination of the premium deficiency reserve (although this is often disclosed in the accounting policy note).

This note is relevant to users of the financial statements because the existence of a premium deficiency reserve is usually a clear indication that issues of rate adequacy exist for at least the affected segment. However, the absence of a non-zero premium deficiency reserve does not necessarily indicate that rates for all business segments are adequate, due to the ability to consider investment income and to group segments into broad categories.

As a result of actuaries' involvement in the pricing and reserving of business, actuaries are in a position to provide input on whether a premium deficiency reserve is necessary and on the amount of the premium deficiency reserve. The analytical approach for this is beyond the scope of this publication, but there are other resources available that provide direction.

In the 2011 Fictitious Notes, the note on premium deficiency reserves indicates that at December 31, 2011, the company had liabilities of $0 related to premium deficiency reserves, and anticipated investment income was considered in that determination. If an insurer were to elect to change its consideration of investment income from one year to the next for the purposes of calculating the premium deficiency reserve, that change would likely need to be disclosed, along with the amount of the impact, in the Note called "Accounting Changes and Correction of Errors."

Discounting of Liabilities for Unpaid Loss and Loss Adjustment Expenses

This note indicates whether a company discounts loss reserves, and if so, it also describes the basis for calculating the amount of the discount. There are two types of discounting that need to be disclosed: tabular discounting and non-tabular discounting.

Tabular discounting applies specifically to outstanding annuity-type claims that pay pension benefits. These claims arise most commonly from workers' compensation coverage but may also arise from other types of liability coverage. A tabular discount reflects mortality assumptions according to a specific life table and a defined interest rate. Both the life table and the interest rates may be specified by the state regulator. Not all insurance companies that have these eligible liabilities choose to utilize tabular discounts.

In the first part of this note, the company needs to indicate whether any liabilities are discounted using tabular discounting. If any tabular discounting is used, the company also needs to indicate the basis and assumptions used in calculating the tabular discount. For

instance, in the 2011 Fictitious Notes, the company disclosed that tabular workers' compensation case reserves were discounted under various state laws, reflected a discount rate of 3.5% or a rate prescribed by the state regulator, and were derived based on a defined set of U.S. life tables.

In the second part of this note, any non-tabular discounting needs to be disclosed and described. This should reconcile to the amount of the non-tabular discount that was disclosed in Schedule P, Part 1, columns 32 and 33. Non-tabular discounting is less common than tabular discounting and is typically only done in specific cases where a company has been permitted by its state regulator to discount a specific type of liability. Two lines of business most commonly used for non-tabular discounting are workers' compensation and medical professional liability.

While tabular discounts are calculated for specific pension claims, non-tabular discounts are typically calculated on the aggregate amount of a specific segment of reserves by using a projected payment pattern and an assumed discount rate. If a company applies any non-tabular discounting, they must disclose that and describe the basis in this note. We can see from the 2011 Fictitious Notes that the company did not apply non-tabular discounting.

The note also requires a company to disclose whether any of the key assumptions used to discount loss reserves (whether for tabular or non-tabular discounting) have changed relative to the prior year.

It is important for actuaries and other users of the financial statement to be familiar with this note because different companies have different discounting policies, and those differences must be considered to make a consistent comparison. Non-tabular discounts may be of particular interest because they usually exist due to a specific exception granted by the regulator, which may relate to the solvency of an insurer. Furthermore, an actuary that is opining on the loss reserves of a company must disclose and describe any discounting of loss reserves in the SAO.

Asbestos/Environmental Reserves

Asbestos and environmental liability reserves have developed adversely over the past several decades. Therefore, exposure to asbestos or environmental liabilities can represent a significant source of uncertainty in a company's loss and LAE reserves. Furthermore, asbestos and environmental liabilities have consistently developed adversely over the past several decades. For these reasons, specific qualitative and quantitative disclosure is required regarding a company's asbestos and environmental reserves.

This note requires a company to disclose whether it has identified a potential exposure to asbestos or environmental reserves. These disclosures specifically exclude exposures relating to policies that were issued specifically to cover asbestos and environmental exposure. If the

company answers affirmatively for either asbestos or environmental exposures, it must disclose the lines of business affected, the nature of the exposures and the reserving methodology used to estimate the liability. In addition to those qualitative disclosures, the company must complete a table that provides the following information for each of the past five years:

- Beginning loss and LAE reserves
- Incurred loss and LAE
- Calendar year payments for losses and LAE
- Ending loss and LAE reserves

This information must be provided separately for asbestos and environmental reserves on a direct, assumed and net of reinsurance basis. The company must also disclose the amount of the reserves that relate to unreported claims (i.e., pure incurred but not reported (IBNR)).

This note is important to the users of the financial statements because it discloses the existence of asbestos and environmental exposure, the magnitude of that exposure and the recent development of that exposure. In cases where these liabilities are material relative to a company's overall reserves and/or have consistently been developing adversely, it should serve as a potential warning sign to the financial health of the company.

Actuaries at insurance companies are often directly involved in the estimation, monitoring and reporting of asbestos and environmental reserves. In situations where the financial statements of a company are under financial review, actuaries may also be in the best position to evaluate the disclosures made here for potential impact on the financial health of the company.

In the 2011 Fictitious Notes, the company acknowledged exposure related to asbestos and environmental liabilities. The company then described its process for identifying, monitoring and estimating these exposures.

The excerpt below in Table 6 shows an example of the five-year history of the calendar year incurred and paid asbestos losses and LAE on a net of reinsurance basis for Fictitious. In this case, we see that the net asbestos liability as of December 31, 2011, was $3.28 million. We also see that there was adverse development in Fictitious' asbestos reserves from 2008 through 2011, as evidenced by the incurred losses and LAE each year.

TABLE 6

Net of Ceded Reinsurance Basis — Asbestos	2007	2008	2009	2010	2011
a. Beginning reserves	$5,450,000	$5,023,000	$3,920,000	$3,709,000	$3,426,000
b. Incurred losses and LAE	–	$49,000	$249,000	$188,000	$236,000
c. Calendar-year payments for losses and LAE	$427,000	$1,153,000	$459,000	$471,000	$382,000
d. Ending reserves	$5,023,000	$3,919,000	$3,710,000	$3,426,000	$3,280,000

The excerpt below in Table 7 includes the information on the portion of these reserves that relates to unreported claims.

TABLE 7

Ending Loss and LAE Reserves for Unreported Claims Included in Part A Above	
1. Direct basis	$3,116,000
2. Assumed reinsurance basis	$0
3. Net of ceded reinsurance basis	$2,782,000

From Tables 6 and 7 we see that $2.78 million out of the total $3.28 million in asbestos reserves (85%) related to unreported claims. The strong majority of the liability that is related to unreported claims underscores the high level of uncertainty in these liabilities.

NOTES THAT MAY BE POTENTIALLY RELEVANT TO ACTUARIES

In addition to the five notes described above, there are several other notes that may be potentially relevant to actuaries. Actuaries should be familiar with these notes and their significance, and they may need to review them when they are evaluating the reserves for a company (particularly if they are the opining actuary).

Summary of Significant Accounting Policies

This note describes the accounting rules used to produce the Annual Statement, including:

- The source of the accounting rules (typically the NAIC *Accounting Practices and Procedures Manual*)
- Any exceptions that were made in applying those rules and the basis for those exceptions, such as an exception that made with specific state approval
- Additional detail on the company's significant accounting policies

Where exceptions are made to the rules in the NAIC *Accounting Practices and Procedures Manual*, they must typically be either prescribed or permitted. "Prescribed" refers to practices that are required by state law, and "permitted" refers to approval by the state regulator.

An actuary who is evaluating the reserves of a company will want to review this note to identify prescribed or permitted practices or other accounting policies that relate to loss reserves. Any unexpected deviations described in this note should be evaluated for their impact on the reserves and general financial health of the insurance company.

The following provides an excerpt of this note as provided in the 2011 Annual Statement for Fictitious:

> 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES.
>
> A. Fictitious Insurance Company prepares its statutory financial statements in conformity with accounting practices prescribed or permitted by the state of Florida. The state of Florida requires that insurance companies domiciled in Florida prepare their statutory basis financial statements in accordance with the National Association of Insurance Commissioners (NAIC) Accounting Practices and Procedures Manual, subject to any deviations prescribed or permitted by the Florida Insurance Commissioner. The impact of any permitted accounting practices on policyholder surplus of the Company is not material.

As shown in this excerpt, the company prepared its statutory financial statements in conformity with the practices prescribed or permitted by the State of Florida and with the NAIC *Accounting Practices and Procedures Manual*, subject to deviations prescribed or permitted by the Florida Insurance Commissioner. Further, the note indicates that the impact of any permitted practices on policyholder surplus was not material.

Events Subsequent

Subsequent events are broadly defined as events that occur between the accounting date of the financial statements (for instance, December 31) and the date that the financial statements are issued (for instance, March 1). Within the broad category of subsequent events, there are also two specific types that should be defined:

- Type 1 (Recognized Subsequent Events) subsequent events provide "additional evidence with respect to conditions that existed as of the date of the Balance Sheet." An example of this type of information would be if updated information was received on a large claim on January 15, when that claim had already been reported and known of prior to December 31, and the company deemed that insufficient IBNR was carried to cover the additional needed reserve.
- Type 2 (Nonrecognized Subsequent Events) subsequent events provide "evidence with respect to conditions that did not exist at the time of the Balance Sheet." An example of a Type 2 subsequent event would be if a new large claim occurred on January 15 and was not previously known.

Type 1 subsequent events should already be reflected in the recorded amounts of the financial statements because the financial statements should reflect all information that is known up until the day that the financial statements are issued relating to the conditions that existed as of the accounting date. Disclosure is not needed unless it is "necessary to keep the financial statements from being misleading." For example, if the booked reserves could not be adjusted in time to incorporate the revised reserve amount necessary to reflect the Type 1 event, this note would disclose the amount by which the reserves need to be adjusted. Note

that changes that are made to reserves due to their normal continual review are not considered Type 1 events.

Type 2 subsequent events are not already, and should not be, reflected in the financial statement. However, they should be described in this note if they "may have a material effect on the financial condition of the company." The guidance says "may have," which means that even if a company has determined that the impact is not material, it should still be disclosed as long as it "may have" a material impact. Type 2 subsequent event disclosure, of course, requires use of management's judgment.

An actuary or other user of the financial statement may consider reviewing this note to verify whether there are any material subsequent events that are not reflected in the financial statements. This is of specific importance to an actuary that is opining on a company's loss reserves because the opining actuary will need to determine whether a subsequent event is material to the estimate of the loss reserves and whether that subsequent event should be considered.

Review of the 2011 Fictitious Notes indicates that no subsequent events were disclosed.

Intercompany Pooling

Intercompany pooling is a common arrangement among companies in a group in which each of the participants fully cedes all of its business to the pool leader, and then each participant assumes back a specific percentage of the total.

In these situations, it is important for a regulator or any other user of the financial statements to understand the pooling arrangement to assess the solvency of the group as a whole. This note discloses the existence of the pooling arrangement and also describes the cessions and assumptions that occur. Typically, this includes identification of each company in the group, the lead company and the pooling percentages for each participant.

In cases where pooling exists, it will affect the various aspects of the Annual Statement in different ways. Some examples include the following:

- The Underwriting and Investment Exhibit will show direct business written by each company and the amounts ceded to the lead company in the pool and the portion of the pool assumed specifically by affiliates.
- Schedule F will show the cessions to the lead company as ceded reinsurance in Part 3 and the assumed business in Part 1.
- Schedule P will show only the pool member's share of the pooled results.

The 2011 Fictitious Notes indicate that this company did not participate in any intercompany pooling.

Structured Settlements

A structured settlement refers to a situation where an insurance company settles a claim by purchasing an annuity on behalf of a claimant. This is most commonly observed on workers' compensation or general liability claims, and the annuity is usually purchased from a life insurance company.

When the annuity is purchased, it is recorded as a paid loss by the original insurance company, and the claim is considered to be closed. However, if the life insurance company providing the annuity was ever to become insolvent, it is possible that the original insurer could still be liable for the remaining portion of the annuity payments.

The purpose of this note is to disclose the total amount of structured settlement payments for which an insurer could be held liable. Furthermore, if the amount of these remaining payments from a single life insurance company exceeds 1% of surplus, specific disclosure of the amount and the company from which the structured settlement was purchased is required.

This note is relevant to users of the financial statements because it describes a potential liability, or credit risk, that is not reflected on the balance sheet. The identification of life insurers that provide coverage for remaining payments exceeding 1% of surplus allows for further review of their financial condition to identify any significant issues.

Review of this note in the 2011 Fictitious Notes indicates that in total the company purchased structured settlements with a statement value of $4.3 million.

High Deductibles

High-deductible policies are commercial insurance policies that have a significant deductible, such as $250,000, giving the insured a substantial retention on each claim. Under these high-deductible policies, the insurer pays the full amount of the claim and then seeks reimbursement from the insured for the portion within the deductible. These types of policies are most commonly seen in workers' compensation but also may be used for liability business. Similar to the situation with structured settlements, these policies can present a credit risk to the insurer that is not apparent in the financial statements. For unpaid claims, the portion of the unpaid amount within the deductible is not included within the insurance company's booked loss reserve in the Annual Statement. The treatment for both paid and unpaid deductible losses creates a credit risk for the insurer due to the possibility that the insured will not reimburse them for the deductible portion of the loss.

This note requires disclosure of the following:

- The amount of reserve credit (i.e., the amount of case reserves established for the deductible portion of a loss) recorded by the company for unpaid claims.

- The amount of billed but not yet collected deductible reimbursements for paid claims.

To understand the potential impact of this credit risk, an actuary or other user of the financial statements who is reviewing the financial health of a company can consider the total amount of credit risk relative to the total unpaid claims and to the company's surplus.

As noted in the Notes to Financial Statements for Fictitious, Fictitious does not issue any policies with high deductible plans.

SUMMARY

Notes to financial statements provide additional qualitative and quantitative disclosure to support the numerical information provided in the statutory financial statements. The Notes provide additional detail to assist the user of the financial statement in understanding the numerical exhibits and provide a source of publically available information on off-balance sheet items.

CHAPTER 11. GENERAL INTERROGATORIES

In the previous chapter we discussed the Notes to Financial Statements. These notes provide additional information at the end of the financial statements in the interest of full disclosure of a company's financial condition. The notes address accounting policy and provide explanatory data and supplemental information to the financial statements. They assist the reader in interpreting some of the more complex items within a company's financial statements by expanding upon and adding clarity to specific items contained in the balance sheet and income statement. In contrast, the General Interrogatories are a series of questions within the statutory Annual Statement that the insurance company is required to respond to. The questions are divided into two parts:

- Part 1, Common Interrogatories, provides general questions applicable to life, health and property/casualty insurers.
- Part 2 provides questions that are specific to the type of insurance company (e.g., life, health or property/casualty). In the Property/Casualty Annual Statement, this section is Property & Casualty Interrogatories.

Similar to the Notes to Financial Statements, the responses provided in the General Interrogatories provide additional clarity to the reader of the Annual Statement but also serve to identify additional areas that warrant closer review by regulatory officials.

COMMON INTERROGATORIES

Part 1 contains of the following subheadings: General, Board of Directors, Financial, Investment and Other. The purpose of each section is to give the reader an understanding of the company's operations, business practices, and the types of internal and external controls in place.

General

The General subsection asks questions pertaining to the following topics:

- Holding company relationships
- Latest regulatory financial examinations
- Excessive sales commission levels
- Merger activity
- Suspension of licenses
- Foreign control
- Exemptions from required regulations
- Whether senior management is subject to a code of ethics

Answers to these questions provide the reader with additional information about the company and its discipline in following the "rules." For example, if a company has suspended licenses or does not comply with recommendations from the latest financial examinations, there may be a lack of internal discipline, and this company would therefore be looked at with further scrutiny by external parties. Likewise, further inquiry may be appropriate if a company reports excessive commission levels, as this might be a sign that the company is conceding on commission to maintain business or achieve growth.

The General subsection also provides the name and address of the independent certified public accountant (CPA) or accounting firm (the auditor) conducting the annual audit and the appointed actuary.

While important to peruse all the interrogatories, knowledge of the auditor, appointed actuary and latest financial exam(s) are of particular relevance to the property/casualty actuary.

Audit firm: The CPA opines as to whether the insurance company's financial statements are free of material misstatement and prepared in accordance with the accounting principles used. The audit firm is responsible for reconciling figures contained in a company's financial statements to detailed underlying balances and confirming amounts due to or from third parties.

It is important for the actuary to be aware of any misstatements in the financial statements or errors in the underlying data relied upon. Further, in accordance with National Association of Insurance Commissioners (NAIC) data testing requirements,[29] a company's independent accountant and appointed actuary are required to communicate so the accountant can determine which data relied upon by the actuary should be subject to audit testing procedures.

Actuary: The name, address and affiliation of the appointed actuary are provided in the General Interrogatories. The appointed actuary is the actuary explicitly appointed by the insurance company's board of directors, or equivalent body, to opine on the loss and loss adjustment expense (LAE) reserves reported in the company's Annual Statement. It is important for the user of the Annual Statement to know who the appointed actuary is; questions pertaining to the Statement of Actuarial Opinion should be addressed to the appointed actuary.

Latest financial examination: The General Interrogatories also provide information regarding the latest financial examination performed by state regulatory officials. The interrogatories include:

- The date of the latest financial exam

[29] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 19.

- The date through which financial statements were evaluated
- The release date of the examiner's report
- The name of the department performing the exam
- Whether the insurance company has complied with all adjustments and recommendations from the examination report

Regulatory examination reports are generally available to the public through the state insurance department in which the exam was performed. The examination report will provide the state's findings with respect to the adequacy of the company's loss and LAE reserves.

Board of Directors

The Board of Directors subsection of the Common Interrogatories focuses on the board's role in overseeing the company's operations. In particular, it includes questions regarding the board's approval of the purchase or sale of investments and whether the company has a process in place to notify the board of conflicts of interest within the company's senior management. The company is also asked whether permanent records of board proceedings are retained; this enables tracking and monitoring of the board's oversight role.

Financial

While it is generally assumed that the Annual Statement is performed under Statutory Accounting Principles (SAP), the first question within the Financial subsection asks if the statement was performed using another basis (e.g., Generally Accepted Accounting Principles). The basis of accounting is important for users of the statement and should probably be read first when opening an Annual Statement. If it is assumed that the Annual Statement is performed under SAP, yet it is performed under a different accounting basis, then the user may misinterpret individual figures and ultimately a company's financial position.

The questions within the remainder of the Financial subsection pertain to loans made to senior leadership and other stakeholders of the company, assets that the company was obliged to transfer to another party that were not reported as a liability in the statement, assessments other than those to a guaranty fund or guaranty association, and amounts due from affiliates. The purpose is to understand if the company has financial obligations that have not previously been reported in the Annual Statement and/or if the company is providing financial support or a lifeline to stakeholders or affiliates.

Investment

The Investment subsection has the most questions within the General Interrogatories (more than 30). They cover control over assets and investment decisions, security lending programs

and associated collateral, hedging programs, mandatorily convertible preferred stocks or bonds, and compliance with the *Purposes and Procedures Manual* of the NAIC Securities Valuation Office, among other topics. Here again, the questions pertain to the level of control the company has over its operations and compliance with the rules.

Other

The Other subsection captures information about payments made to trade associations, service organizations, statistical or rating bureaus, attorneys or others in connection with legislative or regulatory matters. Examples of such organizations include the Insurance Services Office and A.M. Best Company. The company is required to list the names of organizations where payment exceeded 25% of the subtotal so that the reader can get an idea of the amount of influence or reliance that the company has on a particular organization, bureau or legislative matter.

PROPERTY & CASUALTY INTERROGATORIES

Part 2 of the General Interrogatories is specific to property/casualty insurers and provides more details about the company's exposures that are not readily determinable based on the quantitative information contained in the schedules and exhibits within the Annual Statement. Many of these questions focus on specific exposures that are not generally dealt with by the property/casualty actuary on a daily basis, such as those pertaining to Medicare supplement insurance, health lines of business or health savings accounts. However, other questions are of major interest to actuaries. For example, certain questions center on the company's exposure to catastrophic events and excessive loss, the process by which probable maximum loss is determined and the level of reinsurance protection afforded to protect the company's net results against catastrophic losses. These questions (requests) include the following:

- "What provision has this reporting entity made to protect itself from an excessive loss in the event of a catastrophe under a workers' compensation contract issued without limit of loss?" [30]
- "Describe the method used to estimate this reporting entity's probable maximum insurance loss, and identify the type of insured exposures comprising that probable maximum loss, the locations of concentrations of those exposures and the external sources (such as consulting firms or computer software models), if any, used in the estimation process." [31]
- "What provision has this reporting entity made (such as a catastrophic reinsurance program) to protect itself from an excessive loss arising from the types and

[30] *2011 Property/Casualty Annual Statement*, General Interrogatory 6.1 (Part 2 Property & Casualty Interrogatories).
[31] Ibid., General Interrogatory 6.2 (Part 2 Property & Casualty Interrogatories).

concentrations of insured exposures comprising its probable maximum property insurance loss?" [32]

- "Does the reporting entity carry catastrophe reinsurance protection for at least one reinstatement, in an amount sufficient to cover its estimated probable maximum loss attributable to a single loss event or occurrence?" [33]
- "If no, describe any arrangements or mechanisms employed by the reporting entity to supplement its catastrophe reinsurance program or to hedge its exposure to unreinsured catastrophic loss." [34]

Although the General Interrogatories are not included for Fictitious Insurance Company, the aforementioned questions would be of particular interest to users of Fictitious' Annual Statement in light of the company's catastrophic loss experience in 2011. Review of answers to the above questions in conjunction with the information provided in Schedules F and P about Fictitious' reinsurers and ceded loss ratios would assist the user in evaluating the adequacy of Fictitious' reinsurance protection relative to its catastrophe exposures. Other questions within the Property & Casualty Interrogatories that are of interest include those pertaining to the use of finite reinsurance. Finite reinsurance was a hot topic in the property/casualty insurance industry in 2005 when several large insurance companies were fined by the Securities and Exchange Commission for accounting for finite reinsurance deals in a way to bolster their financial position.

In its simplest form, finite reinsurance does not transfer underwriting risk; rather it is a play on interest. Assume an insurance company knows it will have to pay a fixed amount in losses, say $10 million, in two years. Under a finite reinsurance deal, the insurance company could take the present value of $10 million and give it to a reinsurance company as "premium," in exchange for an agreement that the reinsurer pay the $10 million in losses two years from now. The amount the reinsurer will have to pay is fixed ($10 million), and the time the reinsurer will have to pay the losses is fixed (two years); there is no underwriting or timing risk involved in the transaction.

Using a simplified example, assuming a 5% rate of interest, if the insurance company were to account for this contract as reinsurance, its balance sheet would show a reduction of approximately $9 million in cash for premium paid (the present value of $10 million at 5% interest per year for two years) in return for a corresponding reduction of $10 million in loss reserves, resulting in a net increase to surplus of approximately $1 million. However, since there is no underwriting or timing risk, this is more akin to a deposit, such as one with a bank, and this is how such contracts must be accounted for. There is no surplus relief as a result of this contract; the insurer still has to pay $10 million in two years.

[32] Ibid., General Interrogatory 6.3 (Part 2 Property & Casualty Interrogatories).
[33] Ibid., General Interrogatory 6.4 (Part 2 Property & Casualty Interrogatories).
[34] Ibid., General Interrogatory 6.5 (Part 2 Property & Casualty Interrogatories).

Several high-profile insurance companies engaged in finite reinsurance arrangements in the early 2000s to boost their financial results through improper accounting. This behavior prompted the NAIC to adopt additional disclosure requirements, including an expansion of the Property & Casualty Interrogatories. One such interrogatory requires insurers to answer affirmatively if they ceded reinsurance that:

1. Resulted in underwriting gain (or loss) of more than 5% of prior year surplus or ceded premiums or loss and LAE reserves of more than 5% of surplus.
2. Was accounted for as reinsurance rather than as a deposit.
3. Had one or more of the following features ("or other features that would have similar results"[35]):
    a. Duration of at least two years and is non-cancelable during the term.
    b. Limited cancellation provisions such that the ceding company is required to enter into a new contract with the same reinsurer or its affiliate.
    c. Aggregate stop loss coverage.
    d. The right by either party to commute, unless triggered by a downgrade in the credit rating of the other party.
    e. The ability to report or pay losses less frequently than quarterly.
    f. Delayed timing of reimbursement to the ceding company.[36]

A following interrogatory requires insurers to answer affirmatively if they have entered any ceded reinsurance contracts where ceded premium is 50% or more than the insurer's gross written premium, or 25% or more of the ceded written premium is retroceded to the insurer. Reinsurance ceded to entities other than captives under the insurer's control or approved pooling arrangements is excluded from this interrogatory.[37]

If either interrogatory is answered affirmatively by the insurance company, the insurer is required to file the Reinsurance Summary Supplemental Filing to the Annual Statement. This filing is due on March 1. Within this filing the insurer is required to disclose:

1. The financial impact on the balance sheet and statement of income if such contracts were excluded (i.e., the restatement of assets, liabilities, surplus and net income gross of the reinsurance contract(s)).
2. A summary of the applicable terms of the contract(s) that triggered the affirmative response.
3. The reasons management entered into the contract, including the expected financial gain.[38]

[35] Ibid., General Interrogatory 9.1 (Part 2 Property & Casualty Interrogatories).
[36] Ibid., General Interrogatory 9.1 (Part 2 Property & Casualty Interrogatories).
[37] Ibid., General Interrogatory 9.2 (Part 2 Property & Casualty Interrogatories).
[38] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 440.

The intent of these additional interrogatories and the supplemental filing is to identify those contracts that may be accounted for improperly and therefore warrant further review by regulatory officials. Knowledge of such contracts is relevant to the actuary as the accounting treatment may impact the actuary's evaluation of unpaid claims. If a ceded contract is accounted for as reinsurance, it will serve to reduce the unpaid claim liabilities; if accounted for as a deposit, it will not.

Examples of other items addressed within the Property & Casualty Interrogatories that tend to be a focus of the actuary include:

- Whether there are specific limiting provisions within reinsurance contracts, guaranteed policies and retrospectively rated policies, as these features may affect the actuary's evaluation of unpaid claims.[39]
- Any releases of liability under reinsured policies, such that the company could reassume liability and potentially have its surplus position weakened as a result.[40]
- Exposure to warranty business, whereby the adequacy of the unearned premium reserve would be the focus of attention as the contract terms, and therefore exposure, tends to continue beyond 12 months.[41]

[39] 2011 *Property/Casualty Annual Statement*, General Interrogatory 7.1 (Part 2 Property & Casualty Interrogatories).
[40] Ibid., General Interrogatory 8.1 (Part 2 Property & Casualty Interrogatories).
[41] Ibid., General Interrogatory 16.1 (Part 2 Property & Casualty Interrogatories).

CHAPTER 12. FIVE-YEAR HISTORICAL DATA EXHIBIT

OVERVIEW

Most other exhibits and schedules within the Annual Statement provide only one or two years of financial data for a company. The Five-Year Historical Data exhibit is valuable because it provides a summarization of key financial figures and statistics from historical Annual Statements going back five years: the current and prior four. Key line items from the balance sheet and income statement are included. Also included are operating ratios and ratios showing one- and two-year development in loss reserves relative to policyholders' surplus. This compilation facilitates the identification of trends when evaluating the health of a property/casualty insurance company.

Following is a brief overview of content that actuaries tend to focus on within this exhibit, with illustrations using data from Fictitious' 2011 Annual Statement where deemed relevant.

WRITTEN PREMIUM

The first page of the Five-Year Historical Data exhibit begins with the insurance company's revenue. For an insurance company, revenue is in the form of written premium. Gross and net written premium information is provided. Gross and net amounts are summarized into the following five lines of business categories:

1. Liability
2. Property
3. Property and liability combined
4. All other
5. Non-proportional reinsurance

A sixth line contains the totals.

This information shows how the company's premium volume, use of reinsurance and business mix have changed over time. Things to look out for when assessing the health of an insurance company include rapid growth or decline in revenue, increases or decreases in the use of reinsurance protection, and changes in business mix toward riskier or unprofitable lines. Observations such as these would prompt additional inquiry through review of other schedules, exhibits and notes within the Annual Statement and a meeting with company management. For example, if a company significantly increased its use of ceded reinsurance, we would want to understand the quality of the reinsurance. The Notes to Financial Statements and Schedule F provide additional information on the company's reinsurers.

Total gross and net written premium figures from Fictitious' Five-Year Historical Data exhibit are displayed in Table 8.

TABLE 8

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
	2011	2010	2009	2008	2007
6. Gross premiums written	28,634,000	28,085,000	29,519,000	31,238,000	31,670,000
	2%	-5%	-6%	-1%	
12. Net premiums written	26,752,000	25,936,000	25,521,000	25,583,000	25,363,000
	3%	2%	0%	1%	
Net/gross ratio	93%	92%	86%	82%	80%

Fictitious experienced an approximate 5% decline in gross writings in 2009 and 2010. This could have been attributed to many things, including a decrease in concentration in a certain line of business or risk class, the continued softening of the market observed over this time period or a decrease in the amount of coverage purchased. Gross written premiums increased by 2% in 2011, which again could have been a function of the economy or insurance prices starting to rebound or both.

Over the same period, net written premium volume was relatively flat and even slightly positive. Calculation of the net-to-gross ratio shows that the company's net retention had been growing since 2007, from 80% in 2007 to 93% in 2011. This means that the company was ceding fewer premium dollars to its reinsurers. This could have been attributed to either a decision by the company to retain more business or a softening in reinsurance prices over the period or both. Observations such as these would warrant further inquiry of company management to fully understand the cause for changes in the company's direct, assumed and ceded business volume.

Table 9 shows the gross written premium figures by line of business segment as reported by Fictitious, below which the corresponding distribution of gross written premium by segment is shown.

TABLE 9

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
Gross premiums written (GPW)	2011	2010	2009	2008	2007
1. Liability lines	13,281,000	13,843,000	15,075,000	16,422,000	16,815,000
2. Property lines	5,566,000	4,990,000	5,436,000	5,925,000	6,155,000
3. Property and liability lines	9,649,000	8,936,000	8,651,000	8,544,000	8,355,000
4. All other lines	138,000	316,000	357,000	347,000	345,000
5. Non-proportional reinsurance lines	-	-	-	-	-
6. Total	**28,634,000**	**28,085,000**	**29,519,000**	**31,238,000**	**31,670,000**
Distribution of GPW	2011	2010	2009	2008	2007
Liability lines	46%	49%	51%	53%	53%
Property lines	19%	18%	18%	19%	19%
Property and liability lines	34%	32%	29%	27%	26%
All other lines	0%	1%	1%	1%	1%
Non-proportional reinsurance lines	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

For Fictitious, the lines of business flowing into the segments identified in Table 9 are as follows:[42]

1. Liability lines: workers' compensation, other liability and automobile liability
2. Property lines: fire and auto physical damage
3. Property and liability lines: homeowners and commercial multiple peril
4. All other lines: fidelity

Fictitious does not write any non-proportional reinsurance (line 5).

Over the five-year period ending in 2011, Fictitious' writings declined in the liability lines (line 1) and grew in the property and liability lines (line 3). Writings in the straight property lines (line 2) remained consistent over the period.

Property lines tend to be short-tailed in nature; property claims are reported and paid relatively quickly when compared to liability claims. Shifts from liability to property lines would tend to result in a reduction in uncertainty surrounding the company's loss and loss adjustment expense (LAE) reserves. However, shifts to the property lines increase uncertainty due to the exposure to catastrophe loss.

A similar analysis can be performed on Fictitious' net written premium data.

[42] Written premium by line of business is shown in Part 1B, Premiums Written, of the U&IE.

STATEMENT OF INCOME

The Five-Year Historical Data exhibit also provides summarized information from the Statement of Income that is useful in identifying components of changes in a company's net income (e.g., whether attributed to underwriting or investments or other income). Table 10 shows this data for Fictitious.

TABLE 10

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
Statement of Income	2011	2010	2009	2008	2007
13. Net underwriting gain (loss)	(2,133,000)	1,488,000	2,544,000	1,883,000	2,773,000
14. Net investment gain (loss)	4,305,000	4,415,000	2,850,000	3,993,000	4,747,000
15. Total other income	33,000	47,000	38,000	143,000	47,000
16. Dividends to policyholders	46,000	32,000	23,000	29,000	31,000
17. Federal and foreign income taxes incurred	(20,000)	963,000	1,489,000	1,378,000	1,304,000
18. Net income	2,179,000	4,955,000	3,920,000	4,612,000	6,232,000
Increase/(decrease) year-over-year	(2,776,000)	1,035,000	(692,000)	(1,620,000)	
Percentage increase/(decrease) year-over-year	-56%	26%	-15%	-26%	

We see that Fictitious' net income was been positive in each of the years 2007 through 2011, with growth achieved in 2010 over 2009 after two years of decline. The $1 million (+26%) growth observed in 2010 was predominantly attributed to improvements in the financial markets and a reduction in taxes. Investment gains improved in 2010 to levels near where they were prior to the 2008 financial crisis and remained at that level in 2011.

Despite the rebound in the investment market, the company experienced a 56% decline in net income in 2011 over 2010 due to a net underwriting loss of $2 million. Given what we know about the company's shift toward property lines over the period 2007 through 2011, and consequential increase in exposure to catastrophe losses, we can hypothesize that the underwriting loss in 2011 was due to the high frequency of catastrophe events during the year. Investigation of other statements and exhibits within Fictitious' Annual Statement can help us validate our theory.

As discussed in *Chapter 8. The Statutory Income Statement: Income* and Changes to Surplus, the Statement of Income on page 4 of the Annual Statement provides the components of net underwriting gain (loss), net investment income gain (loss) and other income, and each component can be further investigated through various supporting schedules. For example, as displayed in the Statement of Income for Fictitious, the net underwriting loss of $2 million was primarily driven by an increase in losses incurred during 2011 ($17 million in 2011 versus $13 million in 2010, per line 2 of the Statement of Income).

We can drill down further by looking at the one-year development line (Development in estimated losses and loss expenses incurred prior to current year) within the five-year exhibit to see whether this increase was attributed to prior-year development or current-year incurred losses.

TABLE 11

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD in 000s)					
	2011	2010	2009	2008	2007
73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2, Summary, Line 12, Column 11)	(875)	(1,354)	(1,618)	(1,959)	(918)

As displayed in the one-year development line, loss and defense and cost containment (DCC) development in 2011 on prior accident years was *negative* $875,000.[43] This means that the company experienced favorable development in 2011 on the prior years in the aggregate. As a result, the underwriting loss in 2011 must have been due to current (2011) accident year incurreds, providing further evidence that catastrophes were the cause. A review of accident year 2011 loss and DCC experience per Schedule P can confirm this.

Turning to Schedule P, Part 2, Summary, we see that accident year 2011 incurred loss and DCC was $19 million, approximately $3 million higher than it had been in the company's 10-year history. Later in Schedule P, the line of business detail shows that the company experienced higher incurred loss and DCC on the homeowners/farmowners line (roughly $4 million on accident year 2011 versus $2.5 million on accident year 2010). This further suggests that Fictitious, like the rest of the insurance industry, was adversely impacted by the natural catastrophes in 2011.

With respect to investment gains in 2010, a line-by-line comparison of the Exhibit of Net Investment Income within the company's current-year and prior-year Annual Statements can provide further details on changes in the company's investment income, as can a line-by-line comparison of changes in amounts by asset class within the Exhibit of Capital Gains (Losses). While these two exhibits are not included in the Annual Statement excerpts provided for Fictitious, a study of the changes in net investment income can be made by reviewing these exhibits for one of the (real) insurance companies on the CAS Exam 6 U.S. Syllabus.

Absent these exhibits for Fictitious, we expect that the growth in investment income in 2010 was most likely due to a rebound in the financial markets post crisis.

[43] We acknowledge that Schedule P, Part 2, Summary, provides both loss and DCC, while we are focusing on the change in incurred losses only. However, as shown in the Statement of Income, loss adjustment expenses have not changed significantly in dollar terms. We therefore feel this comparison is reasonable for illustration purposes.

As displayed in the Five-Year Historical Data exhibit for Fictitious, the decline in taxes in 2011 is directionally consistent with what one would expect with a decline in income. However, the decrease in taxes between 2009 and 2010 by approximately $0.5 million (from $1,489,000 to $963,000) is somewhat counterintuitive. Generally, one would expect to pay more taxes the higher the income. While not included in the Annual Statement excerpts provided for Fictitious, the note in the financial statements titled "Income Taxes" (number 9 in the Notes to Financial Statements of the 2011 Annual Statement) can be helpful in explaining movements in taxes from year to year, such as that which occurred for Fictitious. This note provides details on deferred tax assets and losses and shows what taxes would have been if a straight 35% statutory tax rate was used. It also provides the reasons for differences between the total recorded income tax and taxes at the statutory rate, which might in turn explain higher or lower taxes paid in a particular year.

BALANCE SHEET

The balance sheet section of the Five-Year Historical Data exhibit contains summarized information that is useful in identifying components of changes in surplus (e.g., whether attributed to changes in assets or certain liability items) over time.

Only two major asset categories are provided: (1) total admitted assets and (2) premiums and considerations. However, the distribution of assets by class is provided further along in the exhibit (percentage distribution of cash, cash equivalents and invested assets). For trend analysis, the distribution of assets by class is more useful than the actual dollar amounts. When analyzing the health of a property/casualty insurer, things to look out for include large holdings in risky asset classes or changes in mix to riskier classes. However, the user would also look to the company's use of hedging vehicles to mitigate increased holdings in riskier investments, such as derivative instruments (see *Chapter 8. The Statutory Income Statement: Income* and Changes to Surplus).

The remaining lines within the balance sheet section of the exhibit are summarized items from the Liabilities, Surplus and Other Funds page. Of most relevance to the property/casualty actuary is the level of loss and LAE reserves, unearned premiums, and surplus relative to the actuary's knowledge of the underlying business and the changes therein.

A review of Fictitious' data shows no significant changes in these items other than a dip in surplus in 2008 (6% decrease from 2007) and 2010 (12% decrease from 2009). The capital and surplus account within the Statement of Income shows that the large decrease in 2010 was attributed to sizeable dividends paid to stockholders during the year (approximately $10 million). This can also be seen in the Capital and Surplus Account section of the Five-Year Historical Data exhibit. This section provides two sources of the change in surplus: that due to unrealized capital gains (losses) and that resulting from dividends paid by the company to its stockholders.

RISK-BASED CAPITAL

We will discuss Risk-Based Capital (RBC) in detail in *Chapter 19. Risk-Based Capital*. It is a solvency framework developed by the National Association of Insurance Commissioners from which an amount of capital is determined formulaically based on the application of specified factors to an insurance company's recorded assets and liabilities as of year-end. The calculated capital, or RBC, is compared to the total adjusted capital recorded by the insurance company at year-end to determine the level, if any, of company or regulatory action required from a solvency perspective.

The components of the RBC ratio are provided in the Five-Year Historical Data exhibit but not the RBC ratios themselves. However, the user can calculate the RBC ratios from the information provided in the Five-Year Historical Data exhibit. Table 12 provides the figures shown in lines 28 and 29 of Fictitious Insurance Company's 2011 Five-Year Historical Data, below which we show the RBC ratios that we calculated from lines 28 and 29.

TABLE 12

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
Risk-Based Capital analysis	2011	2010	2009	2008	2007
28. Total adjusted capital	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
29. Authorized control level RBC	5,552,000	6,097,300	5,854,000	5,685,000	6,517,000
Total adjusted capital as a percent of ACL (= Line 28 / Line 29)	559%	518%	611%	573%	530%
Total adjusted capital as a percent of RBC (= Line 28 / (Line 29*2))	279%	259%	306%	286%	265%
Reduction in capital to next RBC level (= Line 28 - (Line 29*2))	19,920,000	19,413,400	24,085,000	21,202,000	21,533,000

Table 69 of this publication provides the various levels of company and/or regulatory action in response to a company's calculated RBC ratios. For Fictitious, the percentage of adjusted capital to authorized control level (ACL) ranged between 518% to 611% over the five-year period 2007 through 2011, which is 2.6 to 3.1 times the first level requiring action (company action level, which is equal to 200% of ACL). This means that Fictitious' capital in 2011 could have been reduced by $20 million before any action was required under the RBC requirements. This was computed by taking the total capital in line 28 and subtracting from it the upper bound of the range of the first action level of RBC requirements (150% to 200%).[44]

In establishing a materiality standard for Statement of Actuarial Opinion purposes, some actuaries look at the impact on surplus from a change in RBC levels. In these circumstances, an increase in reserves by an amount that would cause the company (or regulator) to take

[44] $19.920 million = $31.024 million - (2 * $5.552 million).

action under RBC is thought to be material. This is discussed further in *Chapter 16. Statement of Actuarial Opinion*.

OPERATING PERCENTAGES

Operating percentages provide the distribution of earned premium into its components of loss, LAE, other underwriting expenses and the profit (loss) from underwriting (net underwriting gain (loss)) that remains. For Fictitious, the ratios were reasonably consistent over the five-year period with the exception of 2011. The high loss ratio in 2011 relative to prior years highlights the spike in losses in 2011 and resulting loss from underwriting.

Spikes or changes in other underwriting expenses directly impact profitability and would be investigated further as to whether such costs were necessary and/or indicative of costs to be incurred by the company in the future.

ONE- AND TWO-YEAR LOSS DEVELOPMENT

Actuaries, in particular those that work in the reserving area, pay considerable attention to the last four lines of the Five-Year Historical Data exhibit (lines 73 through 76 of 2011 Five-Year Historical Data exhibit), as this information shows how the company's prior-year loss and DCC reserves have developed over one- and two-year time horizons.

We already presented the one-year development line (line 73) when interpreting the cause of the underwriting loss incurred by the company in 2011. The subsequent line (line 74) shows the relationship of one-year loss and DCC development to the company's surplus as recorded in the prior year's balance sheet. The purpose is to show the impact of adverse or favorable reserve development on policyholders' surplus. That is, it shows the percentage of surplus that would have been absorbed (enhanced) as a result of adverse (favorable) loss development.

In a perfect world, development would be nil. However, loss reserves represent estimates made by a company's management based on information available as of a certain point in time. It is expected that actual loss emergence will differ from expected, and company management will revise its estimates each year as additional information becomes available. As a result, it's not often that $0 is observed in the one-year (or two-year) development line. The issue here is not that a company experiences development in its loss reserves, but rather how big the development is and its significance to surplus.

Stakeholders tend to be concerned when large positive numbers are shown in the development lines as this means that the prior-year reserves were deficient. The question is whether the increase is attributed to an anomaly or if it is symptomatic of a trend of under-reserving. Further investigation could be made within the Annual Statement by reading the Notes to Financial Statements, specifically the note on changes in incurred loss and LAE, and looking at Schedule P, Part 2, which may show that the adverse development is coming from

a particular year or line of business. Oftentimes, such development is also discussed in public reports by and on behalf of the company (e.g., 10-K for public companies or the AMB Credit Report for the company published by A.M. Best). However, nothing supplants discussion with company management.

Table 13 provides both the one-year development line and the relationship of one-year development to prior-year surplus (line 74) for Fictitious.

TABLE 13

Data from Fictitious Insurance Company 2011 Five-Year Historical Data					
	2011	2010	2009	2008	2007
73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2, Summary, Line 12, Column 11); *USD in 000s*	(875)	(1,354)	(1,618)	(1,959)	(918)
74. Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year-end (line 73 divided by Page 4, Line 21, Column 1 x 100)	(2.8)	(3.8)	(5.0)	(5.6)	(2.6)

During 2011, Fictitious' booked net ultimate loss and DCC estimates on accident years 2010 and prior developed favorably by $0.9 million (line 73). This means that, with the benefit of one year's hindsight, the net loss and DCC reserves recorded by the company as of December 31, 2010, were overstated by $0.9 million. That overstatement represented 3% of the company's surplus as of December 31, 2010 (line 74).

Going back a year, with the benefit of one year's hindsight, recorded net loss and DCC reserves as of December 31, 2009, were overstated by $1.4 million, or 4% of surplus.

We can continue going back and observe development in years 2007 through 2009 on prior-year reserves. For Fictitious, the result was consistent over the five-year period; recorded loss and DCC reserves (or ultimate loss and DCC estimates) developed favorably in the following year. This implies that the company was relatively conservative in establishing its reserve estimates.

While stakeholders and regulators of insurance companies tend to be more concerned when development is adverse, large favorable development also raises an issue with certain parties. For example, the Internal Revenue Service pays close attention to favorable emergence as overstatements in reserves reduce the amount of taxable income. Additionally, investors would be concerned that the company is accumulating funds that could be better invested elsewhere, thereby suppressing the investor's rate of return.

The two-year development lines show similar information as contained in the one-year lines, with the exception that development over a two-year period is provided. For example, Fictitious' recorded net loss and DCC reserves as of year-end 2009 developed favorably by $2.6 million in 2010 and 2011. This represents 7.3% of surplus recorded at the end of 2009.

TABLE 14

Data from Fictitious Insurance Company 2011 Five-Year Historical Data					
	2011	2010	2009	2008	2007
75. Development in estimated losses and loss expenses incurred two years before the current year and prior year (Schedule P, Part 2, Summary, Line 12, Column 12); *USD in 000s*	(2,602)	(2,906)	(3,680)	(2,544)	(1,059)
76. Percent of development of losses and loss expenses incurred to policyholders' surplus of second prior year-end (Line 75 divided by Page 4, Line 21, Column 2 x 100)	(7.3)	(8.9)	(10.6)	(7.3)	(3.0)

This information enables the actuary to see whether the development tends to be isolated to the first year of development or continues to the next. In Fictitious' case, the favorable development continued through year two. For example, one-year development on year-end 2009 reserves developed by $1.4 million in 2010 (line 73) and then another $1.2 million in 2011 (per line 75, computed by taking $2.6 million and subtracting the one-year development of $1.4 million).

CHAPTER 13. OVERVIEW OF SCHEDULES AND THEIR PURPOSE

OVERVIEW

Schedules A through E

The first eight schedules (Schedules A through E) of the Annual Statement provide further transparency of the company's assets, as displayed in the balance sheet of the statutory financial statements. The purpose of these schedules is to assist stakeholders and regulators in identifying and analyzing risks inherent in those assets, changes in those assets and differences in their valuation.

The following outlines the contents of Schedules A through E:

TABLE 15

Schedule	Part	Title
A	1	Real Estate Owned December 31 of Current Year
A	2	Real Estate Acquired and Additions Made During the Year
A	3	Real Estate Disposed During the Year
B	1	Mortgage Loans Owned December 31 of Current Year
B	2	Mortgage Loans Acquired and Additions Made During the Year
B	3	Mortgage Loans Disposed, Transferred or Repaid During the Year
BA	1	Other Long-Term Invested Assets Owned December 31 of Current Year
BA	2	Other Long-Term Invested Assets Acquired and Additions Made During the Year
BA	3	Other Long-Term Invested Assets Disposed, Transferred or Repaid During the Year
D	Part 1	Long-Term Bonds Owned December 31 of Current Year
D	Part 2 - Section 1	Preferred Stocks Owned December 31 of Current Year
D	Part 2 - Section 2	Common Stocks Owned December 31 of Current Year
D	Part 3	Long-Term Bonds and Stocks Acquired During Current Year
D	Part 4	Long-Term Bonds and Stocks Sold, Redeemed or Otherwise Disposed of During Current Year
D	Part 5	Long-Term Bonds and Stocks Acquired During the Year and Fully Disposed of During Current Year
D	Part 6 - Section 1	Valuation of Shares of Subsidiary, Controlled or Affiliated Companies
D	Part 6 - Section 2	Valuation of Shares of Lower Tier Company
DA	Part 1	Short-Term Investments Owned December 31 of Current Year
DB	Part A - Section 1	Options, Caps, Floors, Collars, Swaps and Forwards Open December 31, of Current Year
DB	Part A - Section 2	Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year
DB	Part B - Section 1	Futures Contracts Open December 31 of Current Year
DB	Part B - Section 2	Futures Contracts Terminated During Current Year
DB	Part C - Section 1	Company's positions in replication (synthetic asset) transactions Open December 31 of Current Year
DB	Part C - Section 2	Company's positions in replication (synthetic asset) transactions Terminated During Current Year
DB	Part D	Counterparty Exposure for Derivative Instruments Open December 31 of Current Year
DL	Part 1	Securities Lending Collateral Assets (Reinvested Collateral Assets Owned December 31 Current Year)
DL	Part 2	Securities Lending Collateral Assets (Reinvested Collateral Assets Owned December 31 Current Year)
E	Part 1	Cash
E	Part 2	Cash Equivalents
E	Part 3	Special Deposits

There is considerable information within each schedule, including a description of each asset, its value and the basis for valuation. We do not intend to provide all the details of each asset schedule. As discussed previously, most property/casualty actuaries will not need to have a deep understanding of all of the asset classes on the balance sheet. Therefore, we only provide a brief description of each schedule and show how the reader can source the items listed in the asset side of the balance sheet (page 2 of the Annual Statement) to these schedules.

While we will present each of Schedules A through E in order of presentation in the Annual Statement, keep in mind the distribution of admitted assets by class for the property/casualty industry as a whole, as was provided in *Chapter 7. Statutory Balance Sheet*: A Measure of Solvency. Table 16 provides a comparison of the distribution for the industry to that of Fictitious Insurance Company as of December 31, 2011.

TABLE 16[45]

Summary of Net Admitted Assets (column 3) on Page 2 of the Annual Statement				
Assets	Line Number per Page 2	Schedule Reference	Property Casualty Industry	Fictitious Insurance Company
Investments				
Bonds	1	D – Part 1	56.7%	58.7%
Preferred stocks	2.1	D – Part 2 – Section 1	0.7%	0.0%
Common stocks	2.2	D – Part 2 – Section 2	14.4%	19.3%
Mortgage loans	3.1 + 3.2	B	0.3%	0.2%
Real estate	4.1 + 4.2 + 4.3	A	0.7%	3.8%
Cash and short-term investments	5	E, DA	4.6%	1.0%
Contract loans	6		0.0%	0.0%
Derivatives	7	DB	0.0%	0.0%
Other investments	8 + 9 + 10 + 11	BA, DL	7.0%	4.7%
Total cash and investments	**12**		**84.4%**	**87.8%**
Total assets	**28**		**100.0%**	**100.0%**

Note: Contract loans are loans on contracts issued by the insurance company. They typically pertain to life insurance contracts. There is no schedule within the Annual Statement that pertains to or provides additional disclosure about contract loans.

The assets detailed in Schedules A through C and E make up a relatively small portion of the total admitted assets of the property/casualty insurance industry at year-end 2011 (less than 15%). This relationship has remained relatively consistent over the years. Property/casualty insurers tend to invest in relatively short-term, fixed assets of low risk given their need to be able to pay claims emanating from short-term contracts (as opposed to long-term life insurance contracts). As a result, the largest holding of a property/casualty insurer tends to

[45] The distribution of assets by class within this table is based on admitted assets. Schedules A through E provide supporting detail for total assets, including amounts that become nonadmitted in column 2 of the asset side of the statutory balance sheet.

be in bonds, followed by common stocks. Therefore, Schedule D tends to be the most populated of the asset schedules within the Annual Statement.

In assessing the financial health of an insurance company, it is important to understand differences in the distribution of assets by class relative to the industry. In particular, large concentrations in riskier asset classes would warrant additional scrutiny. The information contained in Schedules A through E and in the notes and interrogatories within the Annual Statement will provide some level of quantitative and qualitative detail to aid in the assessment. However, enhanced understanding will come through inquiries of management as to its investment policy, including any hedging strategies that have been implemented to mitigate investments in higher-risk asset classes.

Schedules F and P

Property/casualty actuaries tend to spend more time focusing on page 3 (Liabilities) of the balance sheet than on page 2 (Assets). Therefore, of all the schedules within the Annual Statement, property/casualty actuaries tend to spend the most time with Schedules F and P, in particular Schedule P. Schedule F pertains to reinsurance accounting, and Schedule P pertains to loss and loss adjustment expense reserves. We will devote much of our attention to these Annual Statement schedules in separate chapters for each (*Chapter 14. Schedule F* and *Chapter 15. Schedule P*).

Schedules T and Y

The remaining two schedules, Schedule T and Schedule Y, will be discussed at the end of this chapter. These schedules provide details on the insurance company's premium writings by state and organizational structure, respectively.

SCHEDULE A

Schedule A provides information on real estate directly owned by the insurance company. Schedule A, Part 1 provides a detailed listing of all real estate owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of real estate acquired and disposed during the year, respectively.

Schedule A, Part 1, column 9, Book/Adjusted Carrying Value Less Encumbrances, is the source of the information provided in line 4 of the asset side of the balance sheet. Amounts are provided for each property that the reporting entity owns, grouped in the same three parts as shown in line 4 of page 2:

4.1 Properties occupied by the company
4.2 Properties held for the production of income
4.3 Properties held for sale

All figures are shown less the amount of any encumbrances, which include items such as a lien on the company's property or outstanding principal balance of a mortgaged property.

Consistent with the rest of the property/casualty insurance industry (1%), real estate was a small asset class for Fictitious in 2011, representing less than 4% of its total assets. Although small, actuaries will look at the level of an insurance company's investment in long-term assets and associated cash flows relative to the cash outflows of its liabilities. For example, a property/casualty insurer writing short-tailed lines of business (e.g., homeowners) will require relatively liquid and continual flows from its assets to pay its claims. A large proportion of this company's assets in real estate holdings, or other longer-term assets that do not have constant outflows, might raise questions about liquidity of the company's assets. This is particularly true during unstable economic times when the real estate market is at a low and the seller may not be able to dispose of the investment let alone get the expected value. Schedule A, Part 3 shows what the reporting entity was able to sell real estate investments for over the past year, relative to the value of the investment as shown in the entity's prior-year statement.

SCHEDULE B

Schedule B provides information on mortgage loans owned by the insurance company that are secured by real estate. These are instances where the insurance company has issued a mortgage loan to another party.

Schedule B is organized in the same three parts as Schedule A. Part 1 provides a detailed listing of all mortgage loans owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of mortgage loans acquired and disposed during the year, respectively. Part 3 includes mortgage loans transferred or repaid during the year.

Part 1 is the source of the information provided in line 3 of the asset side of the balance sheet. Line 3 of the asset side of the balance sheet is broken up into two parts:

3.1 First liens
3.2 Other than first liens

The source of the figures provided in line 2 is column 8, book value/recorded investment excluding accrued interest, of Schedule B, Part 1. The figures in column 8 reconcile to the amounts in lines 3.1 and 3.2 on the asset side of the balance sheet. However, it is not evident from Schedule B as to which loans are first liens.

Part 1 provides a detailed listing of mortgage loans owned by the company in the following groupings:

- Mortgages in good standing, which are those loans where the terms are being met by borrowers.

- Restructured mortgages, which are those loans where the terms have been restructured in 1986 or subsequent due to delinquency.
- Mortgages with interest more than 90 days due and not in the process of foreclosure.
- Mortgages in the process of foreclosure.

Issuing mortgages is not a core business strategy of a property/casualty insurance company. Further, mortgage loans are relatively illiquid assets. Therefore, insurers don't have large holdings in Schedule B assets. However, for those insurance companies that do invest in mortgage loans, the groupings provided in Schedule B provide the reader with a sense of the risk associated with the company's mortgage loan investments. For example, investments in mortgages in the process of foreclosure are riskier than those in good standing.

Only 0.2% of Fictitious' assets were invested in mortgage loans on real estate as of December 31, 2011, as compared to 0.3% for the industry.

SCHEDULE BA

Schedule BA provides information on other long-term invested assets owned by the insurance company. These are assets not included in any of the other invested asset schedules, such as real estate that is not owned directly by the insurance company and therefore excluded from Schedule A. Other examples of BA assets include joint ventures, partnership interests and surplus debentures.

Schedule BA, Part 1 provides a detailed listing of other long-term invested assets owned by the company as of December 31 of the current year, while Parts 2 and 3 provide a detailed listing of other long-term invested assets acquired and disposed during the year, respectively. Part 3 includes other long-term invested assets transferred or repaid during the year.

The total in column 12, book/adjusted carrying value less encumbrances, of Schedule BA, Part 1, is the source of the figure provided in line 8 of the asset side of the balance sheet.

As with real estate investments, actuaries will look at the level of cash flows from a company's long-term invested assets relative to the duration of its liabilities for liquidity purposes.

As displayed in Table 17, Fictitious had only 5% of its assets invested in Schedule BA assets at year-end 2011. Schedule BA assets are included within the other investments line. Other investments also include receivables for securities, securities lending reinvested collateral assets and aggregate write-ins for invested assets.

TABLE 17

Current-Year Assets, 2011 Annual Statement Page 2, Column 1 (USD)	
8. Other invested assets (Schedule BA)	4,726,000
28. Total assets	101,454,000
Percentage of total assets (Row 8 / Row 28)	4.7%

SCHEDULE D

Schedule D provides information on bonds and stocks owned by the insurance company. It is broken into six parts, 1 through 6. The amounts shown on the assets side of the balance sheet for bonds and stocks comes from the book/adjusted carrying value column, within Schedule D, Parts 1 and 2.

Part 1

Part 1 provides a detailed listing of the long-term bonds and certificates of deposit (CDs) *owned* by the insurance company as of December 31 of the current year. The term "long-term" is intended to exclude bonds and CDs with maturity or repurchase dates one year or less from the date acquired and cash equivalents with maturities of three months or less. Bonds that are not long term are reported in other schedules. Bonds with maturities of one year or less are reported in Schedule DA. CDs with maturities of one year or less are reported in Schedule E, Part 1. Cash equivalents are reported in Schedule E, Part 2. Schedules DA and E are discussed in subsequent sections of this chapter.

The source of the balance sheet figure for bonds is the total in column 11 (Book/Adjusted Carrying Value) of Schedule D, Part 1.

In Part 1, bonds are separated into the following categories:

- U.S. governments
- All other governments
- U.S. states, territories and possessions (direct and guaranteed)
- U.S. political subdivisions of states, territories and possessions (direct and guaranteed)
- U.S. special revenue and special assessment obligations and all non-guaranteed obligations of agencies and authorities of governments and their political subdivisions
- Industrial and miscellaneous (unaffiliated)
- Hybrid securities
- Parent, subsidiaries and affiliates

Within each of the aforementioned categories, there are issuer obligations, residential mortgage-backed securities (MBS), commercial MBS, and other loan-back and structured securities, with subtotals for each.

In addition to book/adjusted carrying value, the columns within Part 1 enable the user to obtain an understanding of fluctuations in value over the past year and time to maturity of each bond. As noted, users of the Annual Statement consider time to maturity, and therefore liquidity, relative to liability duration.

Part 2

Part 2 provides a detailed listing of the stocks *owned* by the insurance company as of December 31 of the current year. Preferred stocks are in Section 1 of Schedule D, Part 2, and Common stocks are in Section 2.

Schedule D, Part 2 is the source of the information provided within line 2 of the asset side of the balance sheet titled "Stocks (Schedule D)."

The source of the balance sheet figure for preferred stocks is the total in column 8, Book/Adjusted Carrying Value, of Schedule D, Part 2, Section 1, whereas the source for common stocks is the total in column 6, Book/Adjusted Carrying Value, of Schedule D, Part 2, Section 2.

In Part 2, Section 1 of Schedule D, preferred stocks are separated into the following categories:

- Industrial and miscellaneous (unaffiliated)
- Parent, subsidiaries and affiliates

Part 2, Section 2 has the additional categories for common stocks of:

- Mutual funds
- Money market mutual funds

Parts 3 through 6

Part 3 provides a detailed listing of long-term bonds and stocks *acquired during the current year* and still owned by the company as of December 31 of the current year. Those acquired and disposed of during the current year are only provided in subtotal in Part 3, with the details reported in Part 5.

Part 4 provides a detailed listing of long-term bonds and stocks that were *owned as of the beginning of the current year* and disposed of during the year through sale, redemption or

other means. Those acquired and sold during the current year are provided in detail in Part 5, with only subtotals in Part 4.

Part 6 provides a detailed listing of preferred and common stocks in affiliated companies. This is particularly relevant in the calculation of the R_0 charge in the RBC calculation, as we will see in *Chapter 19. Risk-Based Capital*.

SCHEDULE DA

Schedule DA provides information on short-term investments owned by the insurance company. According to the 2011 National Association of Insurance Commissioners (NAIC) *Annual Statement Instructions Property/Casualty*, this schedule is to "include all investments whose maturities (or repurchase dates under repurchase agreement) at the time of acquisition were one year or less except those defined as cash or cash equivalents in accordance with Statement of Statutory Accounting Principles No. 2, Cash, Drafts, and Short-term Investments."[46]

Schedule DA, Part 1 provides a detailed listing of short-term investments by the company as of December 31 of the current year. This is the source of the information provided within line 5 of the asset side of the balance sheet.

Short-term investments can include the following asset classes:

- Bonds
- Mortgage loans and other short-term invested assets for parent, subsidiaries and affiliates
- Mortgage loans
- Exempt money market mutual funds
- Class one money market mutual funds
- Other short-term invested assets

Fictitious had less than 1% of its assets invested in short-term investments in 2011.

SCHEDULE DB

Schedule DB provides information on derivative instruments owned by the insurance company. It is broken into four parts, A through D. Part A provides the company's positions in options, caps, floors, collars, swaps and forwards. Part B provides the company's positions in futures contracts. Part C provides the company's positions in replication (synthetic asset) transactions. And in Part D, the company reports counterparty exposure for derivative instruments open December 31 of the current year. Counterparty exposure is the exposure to credit risk.

[46] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 367.

Parts A and B are further broken into two sections. Section 1 provides open positions during the year, and Section 2 provides positions terminated during the year.

Schedule DB, Parts A and B are the source of the information provided within line 7 of the asset side of the balance sheet, Derivatives (Schedule DB).

While property/casualty insurance companies do not invest much in the derivatives market, derivatives are used to hedge the mismatch between the timing and payment of assets and liabilities. A company investing in a greater proportion of risky assets than the industry (say a higher proportion in common stocks than bonds), would be expected by its stakeholders to have a hedging strategy in place to mitigate those risks.

As displayed on line 7 of the asset side of its balance sheet, Fictitious did not use derivatives in its investment strategy in 2011.

SCHEDULE DL

Schedule DL provides information on securities lending collateral assets. Schedule DL is a fairly new schedule in the Annual Statement, added in 2010 as a result of the financial crisis.[47]

Securities lending received a lot of publicity during the financial crisis of September 2008. Securities lending involves a company lending securities that it does not actively trade to another party for a fee. The borrower will generally sell the borrowed security, in anticipation of repurchasing it at a lower price before returning it to the lender. The difference between the sale price and repurchase price is profit to the borrower.

The borrower is required to post collateral with the lender. This collateral may in turn be invested by the lender; however, the lender needs to have the collateral available for return when the borrower decides to return the borrowed security. These arrangements tend to be for less than a year, and the borrower generally can return the security on relatively short notice. Therefore, a prudent investment strategy would call for investment of the collateral by the lender in short-term, low-risk, liquid markets. Investment in long-term, riskier securities is one of the causes of the financial crisis in 2008.

According to an article by the NAIC and The Center for Insurance Policy and Research,[48] American International Group (AIG) was involved in securities lending whereby securities owned were loaned in exchange for fee and cash collateral. During the period 2005 through 2007, investments of the collateral were made in long-term subprime residential MBS, which subsequently experienced significant declines in market value. When the borrowers came

[47] NAIC and The Center for Insurance Policy and Research, Capital Markets Special Report, *Securities Lending in the Insurance Industry,* http://www.naic.org/capital_markets_archive/110708.htm, (July 11, 2011)
[48] Ibid.

back to AIG to exchange the borrowed securities for the cash collateral they had provided, AIG was experiencing liquidity constraints. The demand for cash from securities lending counterparties put further constraints on AIG, resulting in regulators and the U.S. government stepping in to help alleviate the liquidity issue and reduce strains on AIG's capital.

While securities lending was not the main cause of the financial crisis in 2008, one of the many lessons learned was the lack of transparency in the securities lending market. Schedule DL was created to provide further transparency by providing detailed information on the collateral assets that are reinvested by the insurance company, including the fair value and book value and the date the agreements mature. As the length of the agreement term increases, so does the risk to the insurance company. If borrowers in the company's securities lending program were to return the borrowed securities and request their collateral back with short notice, the company may have difficulty meeting the cash (collateral) demand.[49]

Schedule DL, Part 1 contains those collateral assets that are not included in other investment schedules within the Annual Statement (e.g., Schedule A, B, BA, D, DA and E). Part 2 contains those that are reported in the other asset schedules. Therefore, Part 1 is the source of the information provided in line 10 of the asset side of the balance sheet.

The total in column 6, Book/Adjusted Carrying Value, of Schedule DL, Part 1, is the source of line 10 of the asset side of the balance sheet.

As displayed in Table 18, Fictitious had an immaterial securities lending program relative to total assets and policyholders' surplus at year-end 2011. As a result, sudden demand to return collateral to a borrower would not have had a significant impact on Fictitious' balance sheet.

TABLE 18

Current-Year Assets, 2011 Annual Statement Page 2, Column 1 (USD)	
10. Securities lending reinvested collateral assets (Schedule DL)	79,000
28. Total assets	101,454,000
Percentage reinvested collateral assets (Row 10 / Row 28)	0.08%
Total PHS	31,024,000
Percentage reinvested collateral assets	0.25%

SCHEDULE E

Schedule E provides information on the insurance company's cash and cash equivalents.

Schedule E, Part 1 provides:

[49] Regulators became aware of this strategy as a result of the financial examination process, which occurs only once every three to five years.

- A detailed listing of cash on deposit with banks, trust companies, and savings and loan and building and loan associations
- Totals for cash held in the company's offices
- CDs maturing one year or less (long-term CDs are reporting in Schedule D)

Part 2 provides a detailed listing of investments in what are referred to as cash equivalents and are therefore three months or less.

Part 3 provides a detailed listing of special deposits, which include assets reported in the various asset schedules within the Annual Statement but are segregated for a special purpose, such as bail bonds, workers' compensation, property and casualty insurance, collateral and escrow.

Column 6, Balance, of Schedule E, Part 1, is the source of the cash amount included in line 5 of the asset side of the balance sheet. Column 6, book/adjusted carrying value of Schedule E, Part 2, is the source of the amount of cash equivalents, which are also included in line 5.

Table 19 shows that Fictitious had less than 1% of its assets in cash and cash equivalents at year-end 2011.

TABLE 19

Current-Year Assets, 2011 Annual Statement Page 2, Column 1 (USD)	
5. Cash ($153,000, Sch. E-Part 1), cash equivalents ($0, Sch. E-Part2) and short-term investments ($829,000, Sch. DA)	983,000
28. Total assets	101,454,000
Percentage of total assets (Row 5 / Row 28)	1.0%

SCHEDULE T

Schedule T has two parts:

1. Exhibit of Premiums Written
2. Interstate Compact — Exhibit of Premiums Written

Each part is arranged showing its content by U.S. state (50); the District of Columbia; five U.S. territories (American Samoa, Guam, Puerto Rico, U.S. Virgin Islands and Northern Mariana Islands); Canada; and a line for aggregate other alien territories.[50]

The following provides a general description of the content of each part and their use(s).

[50] According to the glossary in the textbook *Property-Casualty Insurance Accounting* issued by Insurance Accounting & Systems Association, Inc., Eighth Edition (2003), First Addendum (2006), an alien insurance company is defined as "An insurer or reinsurer domiciled outside the U.S. but conducting an insurance or reinsurance business in the U.S."

Exhibit of Premiums Written

The purpose of this schedule is to apportion premiums, losses and other items amongst the states or territories in which the company writes business.

The first column shows the "active status" of the company for each state/territory. Active status is denoted by:

L: Licensed insurance carrier or domiciled Risk Retention Group (RRG)
R: Registered — non-domiciled RRGs
Q: Qualified or accredited reinsurer
E: Eligible — reporting entities eligible or approved to write surplus lines in the state
N: None of the above — not allowed to write business in the state

The total line of this column shows the number of states/territories that the company is licensed in.

Direct losses, premiums and other information are required to be allocated by state/territory regardless of the active status reported. The information requested includes:

- Written premiums
- Earned premiums
- Policyholder dividends
- Paid losses
- Incurred Losses
- Unpaid losses
- Finance and service charges
- Direct premiums written for federal purchasing groups

The complicated part of completing this schedule is figuring out how to allocate the foregoing items by state/territory. The NAIC *Annual Statement Instructions Property/Casualty* looks for the premiums to be reported "based on the physical location of the insured risk (except individual and group health insurance)."[51] Losses are to be reported to the states where the associated premium is allocated.

For example, an insurer writes workers' compensation insurance for an organization that has employees located across the country. The foregoing items need to be allocated to each state/territory based on primary workplace of each employee. Table 20 shows additional examples of the basis for allocating premiums and losses by state/territory, according to the NAIC instructions.

[51] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 241.

TABLE 20

Line of Business	Basis for Allocation by State
Property lines, such as fire, homeowners, boiler and machinery	Location of property
Marine coverages, where property is in transit	Beginning state location
Automobile lines	Location of principal garage of each automobile
Liability lines (other than auto) where premium determined per location	Location of principal office of operation

Companies are required to describe the basis for the allocation in the footnote of Schedule T.

Schedule T is useful to actuaries in several instances, such as the following:

- Actuaries use this schedule to learn where the company writes its business to further research and consider the insurance laws of those states. This is particularly important for workers' compensation insurers where estimates of unpaid claims depend on each state's laws.
- Actuaries also look to this schedule over a series of historical Annual Statements to see if the company has changed geographic concentration or is growing in a particular state. In addition to regulatory differences by state, changes in geographic mix have an impact on the exposures. For example, for a company writing in California or among fault lines, consideration should be made of the company's exposure to earthquakes.
- For a company where industry loss development factors are used in reserving, actuaries may look to this schedule for a distribution of losses by state to determine weights to apply to industry factors by state.

In addition, as we shall see in *Chapter 18. Insurance Expense Exhibit*, the totals in Schedule T are used as a means of reconciling items contained in the Insurance Expense Exhibit.

Interstate Compact — Exhibit of Premiums Written

There is another part to Schedule T that is less well-known to property/casualty actuaries: Interstate Compact — Exhibit of Premiums Written and Allocated by States and Territories. Part 2 only pertains to property/casualty insurers that also write life insurance, annuities, disability income and long-term care insurance products. The purpose of Part 2 is for regulators to monitor writings in these products for consumer protection purposes.

SCHEDULE Y

Schedule Y, Information Concerning Activities of Insurer Members of a Holding Company Group, has two parts:

1. Organizational chart
2. Summary of insurer's transactions with any affiliates

The following provides a brief description of the content and purpose of each.

Part 1 — Organizational Chart

Part 1 is required for those companies that file a registration statement under the Insurance Holding Company System Regulatory Act of the company's domiciliary state.[52]

This part provides exactly what its name says, an organizational chart. In simplest terms, it is similar to a family tree, showing a pictorial representation of where the company lies within an organization and its relationship to the other members of the organization.

We often hear the phrases "sister company," "parent company" and "holding company," but until you see the schematic, it can be difficult to understand where a company fits within an organization. Knowing this and the company's purpose relative to its affiliates is important. For example, the company may have an affiliated managing general agent or other agency that produces its business, or it may have an affiliated claims administrative organization. Consideration of the affiliate's underwriting philosophy and/or claims handling practices is significant in estimating unpaid claims and establishing reserves for the company's liabilities, including those for adjusting expenses.

Sometimes this part is provided in list form as opposed to an actual chart due to the number of companies involved.

Part 1A — Detail of Insurance Holding Company System

This part must be completed by members of a holding company system. The purpose is to provide information about the relationship between the reporting entity and any parent, subsidiary(ies) and/or affiliate(s). The relationship is identified in Part 1A as either:

- Upstream direct parent (UDP)
- Upstream indirect parent (UIP)
- Downstream subsidiary (DS)
- Insurance affiliate (IA)
- Non-insurance affiliate (NIA)

[52] Ibid., page 247.

- Other, which requires an explanation of the relationship in the footnotes to this part (OTH)

Additionally, the controlling entity in the relationship is provided, along with the type of control that the entity has over the other:

- Control through ownership
- Control at the board of directors level
- Control through management
- Control by acting as the attorney-in-fact
- Controlling influence
- Other

If the reporting entity is a member of a holding company system, the reporting entity must include the above items for each parent, subsidiary or affiliate of the reporting entity whose names are listed in column 8 of Schedule Y.

According to the NAIC 2011 *Annual Statement Instructions Property/Casualty*, which references the Insurance Holding Company System Regulatory Act, "Control shall be presumed to exist if any person, directly or indirectly, owns, controls, holds with the power to vote, or holds proxies representing, ten percent (10%) or more of the voting securities by another person."[53]

As we shall see in *Chapter 19. Risk-Based Capital*, this information is particularly useful in determining the RBC R_0 charge for investments in insurance affiliates.

Part 2 — Summary of Insurer's Transactions With Any Affiliates

Schedule Y, Part 2, provides a listing of transactions among members of the holding company system where an insurance affiliate was a party to the transaction. Examples include:

- Shareholder dividends
- Capital infusions
- Purchases/sales of loans or real estate
- Management agreements and service contracts
- Income (disbursements) incurred under reinsurance contracts and reinsurance recoverable (only those transactions that took place during the reporting period are included)

The purpose of this part of Schedule Y is to assist regulators in monitoring monetary flows in and out of insurance company affiliates. This schedule is the same for all members of an

[53] Ibid., page 249.

insurance holding company system. Therefore, the totals all balance to zero, as an outflow from one company is offset by the inflow to another.

CHAPTER 14. SCHEDULE F

OVERVIEW

As noted in the previous *Chapter 13. Overview of Schedules and Their Purpose*, Schedule F and Schedule P are two of the Annual Statement schedules that property/casualty actuaries tend to use most. In this chapter we will focus on Schedule F; Chapter 15 focuses on Schedule P.

Schedule F provides details underlying an insurance company's reinsurance transactions on prospective contracts[54] that meet the conditions for reinsurance accounting as defined in SSAP No. 62R. It includes the names of the counterparties to the transactions and the premium, loss and expense amounts that emanate from those transactions as of December 31 of the reporting year. This information is important to actuaries for several reasons:

- Loss and loss adjustment expense (LAE) reserves recorded by an insurance company include business assumed by the company. Knowledge of the source and amount of assumed reinsurance provides valuable information to an actuary in assessing the reasonableness of the gross and net loss and LAE reserve balances. Schedule F, Part 1 provides a listing of assumed premiums and losses by ceding company.

- Loss and LAE reserves recorded on an insurance company's statutory balance sheet are net of reinsurance. Considerable focus is placed on the collectibility of that reinsurance by users of the Annual Statement, particularly regulators. In fact, the NAIC Instructions to the Statement of Actuarial Opinion require the Appointed Actuary to provide relevant comment paragraphs to address reinsurance. According to the NAIC Instructions, "Before commenting on reinsurance collectibility, the actuary should solicit information from management on any actual collectibility problems, review ratings given to reinsurers by a recognized rating service, and examine Schedule F for the current year for indications of regulatory action or reinsurance recoverable on paid losses over 90 days past due."[55]

  Schedule F, Part 3 provides the name of each of the company's reinsurers, a listing of liability amounts ceded to each reinsurer and the amount of collateral held by the insurance company in support of those liabilities. Using this information, research can be done on the financial ratings of the reinsurers as a measure of the quality of the reinsurance.

[54] According to page 62R-7 of SSAP No. 62R, "Prospective reinsurance is defined as reinsurance in which a reinsurer agrees to reimburse a ceding entity for losses that may be incurred as a result of future insurable events covered under contracts subject to the reinsurance."

[55] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 13.

Schedule F, Part 4 provides the aging of ceded reinsurance. An assessment can be made of the company's exposure to collectibility issues in light of the reinsurer's payment history and the amount of collateral the company holds in support of its reinsured balances, as shown in Schedule F, Part 5.

- The Statement of Actuarial Opinion also requires the Appointed Actuary to comment on and disclose the amount of net reserves for the insurance company's participation in underwriting pools and associations. Schedule F, Part 1 provides a source for this information. In fact, regulators expect there to be a reconciliation of the amount disclosed in the Statement of Actuarial Opinion to Schedule F.[56]

Schedule F also provides the derivation of the provision for reinsurance, which is included as a liability on the statutory balance sheet (page 3, line 16 of the 2011 Annual Statement). While Statutory Accounting Principles (SAP) requires insurance companies to record loss and LAE reserves net of reinsurance, SAP also presumes that a portion of that reinsurance is not collectible. The provision for reinsurance provides "a minimum reserve for uncollectible reinsurance with an additional reserve required if an entity's experience indicates that a higher amount should be provided. The minimum reserve Provision for Reinsurance is recorded as a liability, and the change between years is recorded as a gain or loss directly to unassigned funds (surplus). Any reserve over the minimum amount shall be recorded on the statement of income by reversing the accounts previously utilized to establish the reinsurance recoverable."[57]

This minimum reserve is computed in Schedule F, Part 7. It reflects the conservative nature of statutory accounting since the entire provision may ultimately be collected.

Finally, Schedule F also provides a view of the reporting entity's balance sheet on a gross of reinsurance basis. Ceded reinsurance is a valuable means for insurance companies to mitigate insurance risk. Schedule F, Part 8 enables the user to observe the amount of protection afforded to the company's balance sheet through the use of reinsurance.

Note that retroactive reinsurance does not flow through Schedule F.[58] Ceding companies record loss and LAE reserves gross of retroactive reinsurance and assuming companies

[56] American Academy of Actuaries Committee on Property and Liability Financial Reporting, "Statements of Actuarial Opinion on Property and casualty Loss Reserves 2012," Appendix 9a, "Regulatory Guidance On Property and Casualty Statutory Statements of Actuarial Opinion for the Year 2012 Prepared by the NAIC's Casualty Actuarial and Statistical (C) Task Force," page 99.

[57] SSAP No. 62R, Property & Casualty Reinsurance, paragraph 55.

[58] According to page 62R-7 of SSAP No. 62R, "Retroactive reinsurance is defined as reinsurance in which a reinsurer agrees to reimburse a ceding entity for liabilities incurred as a result of past insurable events covered under contracts subject to the reinsurance." Note that there are exceptions for property/casualty run-off agreements whereby the entire risk for a line of business or segment (e.g., asbestos liabilities) is retroactively transferred by a ceding company to a reinsurer. We will not get into the specifics in this publication, but note that the accounting for this type of contract can be found in SSAP No. 62R, pages 62R-15 and 16.

exclude the retroactive reinsurance from loss and LAE reserves. The same is true for Schedule P[59]; retroactive reinsurance does not flow through Schedule P.

STRUCTURAL ORGANIZATION OF SCHEDULE F

Schedule F is arranged in the following eight parts:

- Part 1 Assumed Reinsurance as of December 31, Current Year (000 Omitted)
- Part 2 Premium Portfolio Reinsurance Effected of (Canceled) during Current Year
- Part 3 Ceded Reinsurance as of December 31, Current Year (000 Omitted)
- Part 4 Aging of Ceded Reinsurance as of December 31, Current Year (000 Omitted)
- Part 5 Provision for Unauthorized Reinsurance as of December 31, Current Year (000 Omitted)
- Part 6 Provision for Overdue Authorized Reinsurance as of December 31, Current Year (in whole dollars)
- Part 7 Provision for Overdue Reinsurance as of December 31, Current Year (in whole dollars)
- Part 8 Restatement of Balance Sheet to Identify Net Credit for Reinsurance

Parts 1, 3 and 7 provide details underlying the reinsurance items on a company's balance sheet. There is one asset item and three liability items on an insurance company's balance sheet that come directly from Schedule F.

The asset item is "amounts recoverable from reinsurers" (Assets, page 2, line 16.1). It includes amounts the insurance company has already paid in loss and LAE to its claimants that are recoverable from its reinsurers. The first of the liability items provide this balance from the reinsurer's perspective (Liabilities, Surplus and Other Funds, page 3, line 2).

The other two liability items that come directly from Schedule F include funds held by the company under reinsurance agreements (Liabilities, Surplus and Other Funds, page 3, line 13) and the provision for reinsurance (Liabilities, Surplus and Other Funds, page 3, line 16). Schedule F, Parts 4, 5 and 6, as well as Part 3, are used to derive the provision for reinsurance in Part 7.

The following illustrates how the amounts in the balance sheet map to those in Schedule F using the 2011 Annual Statement for Fictitious Insurance Company[60]:

[59] SSAP No. 62R, page 62R-8 and 9.

[60] In gaining an understanding of the interplay between the Financial Statements and various Schedules within the Annual Statement, it is important to remember that the amounts in Schedule F, Parts 1 and 3 are displayed in

TABLE 21

Company:	Fictitious Insurance Company
Annual Statement for the year:	2011

Assets, page 2			Schedule F Source				
Line	Item	Current Year	Part	Column	Item	Row	Amount
16.1	Amounts recoverable from reinsurers	426,000	3	7 + 8	Reinsurance recoverable on paid losses and paid LAE	Totals	426

Liabilities, Surplus and Other Bunds, page 3			Schedule F Source				
Line	Item	Current Year	Part	Column	Item	Row	Amount
2.	Reinsurance payable on paid losses and loss adjustment expenses	–	1	6	Reinsurance on paid losses and loss adjustment expenses	Totals	–
13.	Funds held by company under reinsurance treaties	170,000	3	19	Funds held by Company under reinsurance treaties	Totals	170
16.	Provision for reinsurance	283,000	7		Provision for reinsurance	6.	283,000

While relevant, Parts 2 and 8 tend to get less attention by actuaries. As the name suggests, Schedule F, Part 2 provides the user with a detailed listing of all portfolio reinsurance transactions entered into or canceled during the current year.

Schedule F, Part 8 provides a summarized form of the balance sheet with adjustments to restate it on a gross of ceded reinsurance basis. The assets are adjusted to remove any expected recoverables from the company's reinsurer, while the liabilities are restated to remove any anticipated recoveries or payables.

Given the limited level of focus on Parts 2 and 8 by property/casualty actuaries, we will provide only a brief description of their contents and use. We will devote the majority of this chapter on the contents of the other parts of Schedule F and the calculation of the provision for reinsurance.

SCHEDULE F — PART 1: ASSUMED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR (000 OMITTED)

Overview

Part 1 provides the total amount of the insurance company's assumed reinsurance balances by reinsured. It enables the user to obtain additional understanding of the amounts at stake and risks associated with an insurance company's assumed reinsurance transactions as of the current year.

thousands of U.S. dollars, whereas amounts on the balance sheet, as well as in Schedule F, Part 7, are in whole dollars.

With Part 1, each reinsured is separated into the following groups or categories, with subtotals at the end of each category and group[61]:

- Affiliated Insurers:
  - U.S. Intercompany Pooling
  - U.S. Non-Pool
  - Other (non-U.S.)
- Other U.S. Unaffiliated Insurers
- Pools and Associations:
  - Mandatory Pools
  - Voluntary Pools
- Other Non-U.S. Insurers

Knowledge of the group or category the reinsurer is in, as well as the name of the reinsurer, provides the user of the Annual Statement with further insight as to the risk associated with the assumed transaction.[62] For example, the reporting entity may have less control over and knowledge of the risks assumed from an unaffiliated non-U.S. insurer than it would of risks assumed from a U.S. affiliate.

In terms of its structure, the first four columns of Part 1 provide the Federal ID number, NAIC company code, name of the reinsured and the reinsured's domiciliary jurisdiction. The remaining 11 columns provide the dollar amounts pertaining to the assumed reinsurance transactions, including premiums, loss and LAE liabilities, contingent commissions, and collateral or funds held by the ceding company to secure balances owed to it by the reporting entity.

Premiums

The amount of written premium assumed by the insurance company from the reinsurer during the year is shown in column 5. The totals in column 5 (000 omitted) will reconcile to the sum of the totals in columns 2 (reinsurance assumed from affiliates) and 3 (reinsurance assumed from non-affiliates) in Part 1B of the Underwriting and Investment Exhibit (shown in whole dollars).

Assumed premiums receivable, less commissions payable, are shown in column 10. The amount of commissions payable does not include contingent commissions, which are shown in column 9 and discussed below. The amount considered in column 10 is for fixed commissions. For example, if the reporting entity wrote a reinsurance contract for premium of $500,000 with a fixed ceding commission of 25%, all of which was unpaid at the end of the year, the

[61] Each ceding company is listed except for other U.S unaffiliated insurers, mandatory pools and associations, voluntary pools and associations, and other non-U.S. insurers, where the paid plus case outstanding losses and LAE balances are less than $100,000 in total. These reinsureds are grouped together in one line item.

[62] Reinsurance assumed from pools and associations is generally reported by the name of the pool or association rather than the individual insurers that comprise the organization. As a result, it is difficult to gain insight about the underlying risks of the pool(s) and/or association(s) that the insurer participates in from Schedule F alone.

figure in column 10 would be the $500,000 of assumed premium receivable less $125,000 of commissions payable, for a total of $375,000.

The total in column 10 (000 omitted) is included as a part of agent's balances in line 15 (premiums and considerations) of page 2. As we will see later, this is considered in the profit calculation in the IEE.

Unearned premium on assumed business is provided in column 11. This is a liability to the insurance company and is included within line 9 of page 3, entitled unearned premiums, as well as the unearned premium reserves contained in Parts 1 and 1A of the Underwriting and Investment Exhibit. The unearned premium reserves on page 3 and in the Underwriting and Investment Exhibit are net of reinsurance. As such, the assumed unearned premium reserves listed in column 11 of Schedule F, Part 1 make up only one piece of these net amounts.

The amount in Column 11 (000 omitted) should reconcile directly to item (1) within the "*Reinsurance*" note of the "Notes to Financial Statements" titled "*Reinsurance Assumed and Ceded*" (shown in whole dollars; Notes 23C of Fictitious' 2011 Annual Statement).

Loss and LAE liabilities

Known liabilities owed by the reporting entity (i.e., the insurance company) to the reinsured (i.e., ceding company) as of December 31 of the current year are displayed in columns 6 and 7, with column 8 being the sum of the two.

- Column 6 (reinsurance recoverable on paid losses and LAE) represents losses and LAE that the ceding company has already paid but for which the insurance company has yet to pay to the reinsured.
- Column 7 (reinsurance recoverable on known case losses and LAE) provides losses and LAE reported by the ceding company as case reserves and for which the reporting entity has included in its direct plus assumed case reserves stated on Schedule P, Part 1 and its net loss and LAE reserves stated on page 3 of the balance sheet.[63]

The above information is valuable to the actuary in assessing the reasonableness of unpaid claims. The actuary can reconcile the case reserves relied upon in the actuarial analysis to Schedule F, Part 3 and determine where the ceded loss reserves are coming from. However, Part 1 does not provide assumed IBNR. While a ceding company may report IBNR figures to its reinsurer, the reinsurer is responsible for recording assumed IBNR.

As shown in Table 21, the total in column 6 (reinsurance recoverable on paid losses and LAE; 000 omitted) reconciles to the amount on page 3, line 2 (reinsurance payable on paid losses and LAE, displayed in whole dollars). However, the total in column 7 (000 omitted) does not

[63] This is only true for those companies that do not participate in intercompany pooling. A discussion of the treatment of intercompany pooling in Schedule P is provided *Chapter 15. Schedule P* of this publication.

reconcile directly to any exhibits or schedules within the Annual Statement. Known case reserves for losses are a part of the reported losses included in Column 2 of the Underwriting and Investment Exhibit, Part 2A; however LAE would need to be added to this balance to reconcile to the amount in Schedule F, Part 1, column 7.

Contingent commissions

Column 9 provides a listing of contingent commissions payable. Reinsurers pay ceding companies a commission for the premium income generated under the reinsurance contract. Contingent commissions payable are profit commissions generated from assumed reinsurance contracts that have yet to be paid as they are "contingent" on the profitability of the underlying reinsurance arrangement. The total amount listed in column 9 (000 omitted) is included within the amount on page 3, line 4, entitled *Commissions payable, contingent commissions and other similar charges*. The amount in column 9 (000 omitted) should reconcile to item (2) within the "Reinsurance" note of the "Notes to Financial Statements" titled "Reinsurance Assumed and Ceded" (Note 23C of the 2011 Annual Statement), which provides the amount of additional or return commission contingent upon loss experience or other forms of profit sharing arrangement as a result of existing contracts (shown in whole dollars).

Let's go back to the example we used in our explanation of column 10 (assumed premiums receivable), but this time, let's assume that the 25% ceding commission is on a one-to-one sliding scale basis instead of being fixed. The 25% ceding commission assumes a 75% loss ratio. If the loss ratio is worse than expected and ends up being 80%, then the ceding commission drops to 20%. If the loss ratio turns out to be better than expected and is 65%, for example, then the ceding commission increases by 10 points to 35%.

The amount of commissions payable in column 10 would be $500,000, and the contingent commissions payable in column 9 would be $125,000, which is the amount of expected commission at the onset of the contract. Let's fast-forward to the end of the following year and assume that the $500,000 in premium was paid by the ceding company (reinsured) to the reporting entity (reinsurer), and the $125,000 in ceding commission was paid by the reporting entity to the ceding company. However, based on actual loss experience to date, the reporting entity now knows that the loss ratio is 65% as opposed to the 75% originally expected. This means that the reporting entity will owe the ceding company 10 more points of commission, or $50,000. The $50,000 would be shown in column 9 as a positive number and is a liability to the reporting entity. Of course, since the $500,000 in premium has already been received by the reporting entity, the amount shown in column 10 would be $0.

Security

The remaining columns of Schedule F, Part 1 (columns 12 through 15) provide forms of security that ceding companies often require of their reinsurers to avoid credit risk or an insolvency problem with the reinsurer.

Funds held

Funds held by or deposited with reinsured companies (column 12) represent an asset to the reinsurance company and a liability to the ceding company. It represents a provision within a reinsurance contract under which a portion of the premium due to the reinsurer is withheld by the ceding company to pay claims. There is usually a limit to the funds-held balance; however, it is replenished as (or when) it is absorbed.

Not only do the funds held reduce credit risk, but they also serve to reduce the administrative burden of the reinsured having to go to the reinsurance company to collect each time it makes a loss payment. This provision is often beneficial to the reinsurer as the funds withheld are credited for interest, the rate of which is determined in the contract. Given the benefit, this is one provision that is considered in the evaluation of whether a reinsurance contract transfers underwriting risk.

Letters of credit

The dollar amount underlying any letters of credit that the reporting entity is required to post to benefit the reinsured is shown in column 13. Letters of credit are issued by a bank in favor of the reinsured in the event that the reinsurer is unable to meet its obligations. Reinsureds tend to favor this form of credit because it is not part of the estate of an insolvent reinsurer and therefore not tied up or subject to degradation in bankruptcy or liquidation proceedings. However, letters of credit can be very costly to the reinsurer. First, banks charge the reinsurer a fee, and this fee can be very high in uncertain economic times, as experienced during 2008 and several years thereafter. Second, letters of credit serve as a reduction to the reinsurer's line of credit with a bank and therefore reduce the amount of collateralization available on its debt obligations.

Amount of assets pledged or collateral held in trust

Broadly speaking, these are amounts not otherwise included within the funds-held provision. Unlike the other two types of security (funds held and letters of credit), these assets or collateral amounts are under the control of the reinsurer.

As we will see in Schedule F, Part 5, the funds-held provision and letters of credit serve to reduce a ceding company's liability for unauthorized reinsurance.

Schedule F — Part 1 for Fictitious Insurance Company

Because Fictitious Insurance Company does not have any assumed reinsurance, these balances are $0 within Fictitious' 2011 Annual Statement. However, a reconciliation of these

balances could be made within the Annual Statement for another company on the Exam 6 U.S. Syllabus.

SCHEDULE F — PART 2: PREMIUM PORTFOLIO REINSURANCE EFFECTED OR (CANCELED) DURING CURRENT YEAR

Overview

Part 2 provides a detailed listing of portfolio reinsurance transactions effected or canceled during the current year. Portfolio reinsurance is the transfer of policies in force or liabilities remaining on a block of the insurance company's business. Companies tend to enter into these arrangements when they:

- Want to discontinue writing a certain business
- Would like to get the risk or uncertainty associated with the liabilities off of their books
- Need surplus relief, which can come in the form of the discounted premium

However, these transactions come at a price, as the reinsurer will require a risk premium; the benefit of these contracts must be weighed with the cost.

Schedule F – Part 2 for Fictitious Insurance Company

Fictitious Insurance Company neither effected nor canceled any portfolio reinsurance during 2011.

SCHEDULE F — PART 3: CEDED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR (000 OMITTED)

Overview

Part 3 is one of the most referenced parts within Schedule F and marks the beginning of the remaining parts of Schedule F, which focus on ceded reinsurance. Part 3 provides a comprehensive listing of the company's ceded reinsurance balances by reinsurer. It shows the dollar amounts relating to ceded reinsurance contracts, which enable the user to identify amounts recoverable from each of the company's reinsurers and assess credit risk.

Each reinsurer in Parts 3 is separated into the same groups and categories as Part 1. However, these groups and categories are provided separately for authorized reinsurers and unauthorized reinsurers,[64] with subtotals for each. Additionally, the amount reinsured on protected cells is listed separately,[65] in aggregate. As we shall see, the categorization of

[64] An authorized reinsurer is one that is licensed or approved to transact insurance business in a jurisdiction; an unauthorized reinsurer is not.

[65] A protected cell company is one that is separated into separate cells, each having its own assets and liabilities, but also having access to a part of the company's overall capital. The liability to each cell is limited such that

authorized and unauthorized is used in the calculation of the provision for reinsurance, which culminates in Part 7.

With the exception of Part 8, the remaining Parts (3 through 7) of Schedule F each start off with a listing of the Federal ID Number, NAIC Company Code and name of each of the Company's reinsurers. Parts 3 through 5 also include the domiciliary jurisdiction of each reinsurer.

Cessions of 75% or more of subject premium

By definition, an insurance company is a risk-bearing entity. So when an insurance company decides to cede most, if not all, of the risk under a contract, regulators need to understand why an insurer writes business and then cedes a large portion of it to another insurer. Column 5 identifies, through an indicator of the number 2 in the relevant row, each individual reinsurance contract whereby 75% or more of the subject direct written premiums are ceded. The purpose of column 5 is to identify situations where the reporting entity may be acting as a fronting carrier for another company (the reinsurer) in a particular state where the reinsurer is not licensed to transact business. The concern on behalf of the regulator is that the reinsurer is using the fronting company to avoid regulatory oversight.

We often see this in the case of workers' compensation insurance due to the strict licensing requirements. For example, Insurer A may wish to write workers' compensation for a retail organization with locations along the west coast of the U.S. However, Insurer A may not be licensed to write workers' compensation insurance in California. So Insurer A may turn to Insurer B, which is licensed in California, to write the policy on Insurer A's behalf. In turn, Insurer B would cede 100% of the exposure to Insurer A. Insurer B would require a fronting fee to provide this service to Insurer A.

Certain reinsurance transactions are exempt from this requirement, as they are not fronting arrangements and their purpose is not to avoid regulatory oversight. These transactions include:

- Intercompany cessions with affiliates, as these are used to share risks across related companies
- Cessions to a group, association, pool or organization of insurers that underwrite jointly and are subject to examination by any state regulatory authority or that operate pursuant to any state or federal statutory or administrative authorization, such as a workers' compensation or auto assigned risk pool
- Those where the gross annual premium ceded is less than 5% of policyholder surplus, as these transactions are deemed immaterial and may represent situations where an insurance company is exiting a line of business as opposed to a fronting arrangement

creditors to one cell cannot look to another cell or the company as a whole for assets. Only certain jurisdictions currently have insurance legislation pertaining to protected cell companies.

- Cessions to captive insurance companies, which are regulated in their domiciliary state (captive insurance companies are used by parent companies (non-insurance) to keep commercial insurance costs down)

Many of the remaining columns are mirror images (albeit with different column numbers) to the corresponding contents of Part 1 for assumed reinsurance and pertain to premiums ceded, reinsurance recoverable, reinsurance payable and funds held by the reporting entity. In our discussion of the remaining columns of Part 3, we provide parenthetical references to amounts in Schedule F of Fictitious Insurance Company's 2011 Annual Statement where applicable.

Premiums ceded

The amount of written premium that is ceded to each of the company's reinsurers during the year is shown in column 6. The total amount in column 6 ($1,882; 000 omitted) should reconcile to the total of columns 4 plus 5 in Part 1B of the Underwriting and Investment Exhibit (shown in whole dollars).

Reinsurance recoverable

Columns 7 and 8 provide recoverables on paid losses and LAE ($426; 000 omitted). These are booked as an asset on the insurance company's balance sheet ($426,000 on page 2, line 16.1) because the company is awaiting receipt of a recovery from its reinsurer on payments that the insurance company already made to the claimant.

Columns 9 through 12 provide recoverable on unpaid loss and LAE. The totals of column 9 ($5,343; 000 omitted) will reconcile to the Underwriting and Investment, Part 2A, column 3 (shown in whole dollars). And, the totals of column 11 ($4,038; 000 omitted) will reconcile to the Underwriting and Investment, Part 2A, column 7 (shown in whole dollars).

For companies that do not participate in intercompany pooling, Schedule F, Part 3, columns 9 through 12 are equal to the amount of ceded reserves that are netted against the gross loss and LAE reserves, which result in the net loss and loss adjustment expense reserves shown on page 3 of the balance sheet in rows 1 plus 3. Columns 9 through 12 should also reconcile to the sum of the totals in columns 14, 16, 18, 20 and 22 of Schedule P, Part 1 – Summary as follows:

- The totals in Schedule F, Part 3, columns 9 and 11 ($5,343 and $4,038) should reconcile directly to the total amounts in Schedule P, Part 1, columns 14 and 16 ($5,343 and $4,038), respectively.[66]

[66] Differences due to rounding within the Annual Statement for Fictitious Insurance Company.

- Similarly, Schedule F, Part 3, column 10 ($258) should reconcile to Schedule P – Part 1, column 18 ($258), since the NAIC Annual Statement Instructions require column 10 of Schedule F, Part 3 to exclude Adjusting and Other expenses.
- The total in Schedule F, Part 3, column 12 ($503) should reconcile to the sum of the totals in columns 20 and 22 of Schedule P, Part 1 ($503).[67]

Even if the company does participate in intercompany pooling the recoverables on known case and IBNR loss reserves should match columns 3 (reported losses recoverable from authorized and unauthorized companies) and 7 (IBNR losses on reinsurance ceded) of the Underwriting and investment Exhibit Part 2A.

Note that Part 3 provides IBNR reserves, as these are amounts determined and recorded by the reporting entity. Recall that Part 1 does not provide IBNR. Part 1 provides case reserve amounts reported by the assuming company from the ceding company. While the ceding company may report IBNR to the assuming company, it is the assuming company's responsibility to book what it believes to be its best estimate.

Column 13 represents the amount of unearned premium that will be ceded to an insurance company's reinsurers ($920; 000 omitted). This should equal to the parenthetical amount on page 3, line 9 of the balance sheet ($920,000), which provides the reduction to gross unearned premium for the amount ceded. This is a contra liability to the ceding company. It should also reconcile directly to the amount in item (1) within the "Reinsurance" note of the Notes to Financial Statements titled "Reinsurance Assumed and Ceded" (shown in whole dollars; Note 23C of the 2011 Annual Statement).

Column 14 is similar to Schedule F, Part 1, column 9 (contingent commissions payable), but column 14 is from the view point of the reporting entity as a ceding company (reinsured) as opposed to the reporting entity as the reinsurer. Schedule F, Part 3, column 14 represents the amount of contingent commissions receivable from the reporting entity's reinsurers. The amount in column 14 ($12; 000 omitted) should reconcile to item (2) within the "Reinsurance" note of the Notes to Financial Statements titled "Reinsurance Assumed and Ceded" (shown in whole dollars; Note 23C of the 2011 Annual Statement), which provides the amount of additional or return commission contingent upon loss experience or other forms of profit sharing arrangement under the reporting entity's existing reinsurance contracts. In the case of Fictitious, this amount is positive, which means that Fictitious expects to receive additional commission from the companies it cedes business to (specifically Good Reinsurer and Slightly Overdue Reinsurer) as a result of favorable loss experience. However, the amount can also be negative, which would mean that the reinsurer's experience as has been worse than anticipated under the contract and the reporting entity is expected to return some of the commission already received.

[67] Differences due to rounding within the Annual Statement for Fictitious Insurance Company.

Column 15 provides a sum of reinsurance recoverables, whether on paid (an asset) or unpaid losses (a reduction to liabilities), a reduction to unearned premiums, or contingent commissions receivable.

Reinsurance payable

Columns 16 and 17 provide other amounts payable by the insurance company to the reinsurer. All other commissions receivable that are not included in column 14 are netted with ceded balances payable in column 16. Column 16 ($440; 000 omitted) should reconcile to page 3, line 12, "Ceded reinsurance premiums payable (net of ceding commissions) ($440,000). Amounts in column 17 ($0) represent miscellaneous liabilities owed to the reinsurer under the ceded contracts, excluding funds held by the company under the terms of the contracts with its reinsurers. Funds held are provided for separately in column 19.

Column 18 ($11,061; 000 omitted) represents the net amount recoverable from reinsurers and is equal to column 15 reduced by columns 16 and 17.

Funds held

Column 19 provides the liability for funds held by company under reinsurance treaties ($170; 000 omitted) and reconciles to page 3, line 13 ($170,000). This provision is the mirror image of that reported by the reinsurer in a transaction, as described in Part 1. It is used by the reporting entity to protect balances due from the reinsurer under the terms of the reinsurance contract. As we will see in Schedule F, Part 5, this provision enables the insurance company to reduce its liability for unauthorized reinsurance.

Footnotes to Part 3

There is a required footnote at the end of Part 3 that is particularly relevant from a regulatory perspective. The footnote requires disclosure of the top five provisional commission rates under the reporting entity's reinsurance contracts where the ceded premium is greater than $50,000. This note is read in conjunction with column 14 (contingent commissions receivable) and the aforementioned Note to Financials on reinsurance assumed and ceded.

The purpose of these items is to identify companies that may be using reinsurance as a means to conceal high operating leverage. As we shall see in Appendix I of this publication, one purpose of the Insurance Regulatory Information System (IRIS) ratios is to identify companies that may be taking on more business and more risk than they can handle relative to their surplus. Specifically, IRIS Ratio 2 provides the ratio of net written premium to policyholders' surplus. Unusual values triggering regulatory attention are those in excess of 300% on a net basis. The 300% ratio on a net basis corresponds to the age-old generally accepted benchmark that insurers remain within the 3-to-1 range in terms of writings relative to surplus.

Companies growing rapidly may use reinsurance as a means to reduce pressure on its surplus. This is known as "surplus relief." All else being equal, an increase in the amount of ceded premiums will reduce the amount of net premiums and reduce the premium to surplus ratio (IRIS Ratio 2). This is perfectly legitimate; the purpose of reinsurance is to spread and manage insurance risk.

For example, consider a company that has $150 million of direct written premium and surplus of $25 million. The premium-to-surplus ratio is 600%, well above the 300% benchmark. Let's say this company decides to purchase a 30% quota share reinsurance contract with a fixed ceding commission of 35%. The company's net written premium would be:

Direct written premium * (1 – ceding percentage)
= $150 million * (1 – 0.30)
= $105 million.

At the onset of the contract, the company's surplus would grow by the amount of ceding commission:

Direct written premium * ceding percentage * ceding commission
= $150 million * 30% * 35%
= $15.75 million

The resulting surplus would be $40.75 million ($25 million current surplus plus $15.75 million in ceding commission). The purchase of this contract would reduce the company's premium-to-surplus ratio below the 300% "usual" value benchmark, from 600% to 258%.

However, consider the situation where the commission is instead offered on sliding scale basis such that a one-point increase in loss ratio from 65% would result in a one-point decrease in the 35% commission rate. The premium-to-surplus ratio at the onset of this contract would be the same as that under the situation where the commission rate is fixed (258%). However, if the actual loss ratio turns out to be 80%, then the company will have to return $6.75 million of the original $15.75 million in ceding commission. Instead of receiving 35% of ceded premium in commission, the company (reinsurer) will end up getting only 20%. If a 20% fixed commission rate was considered at the onset, the premium-to-surplus ratio would have been 309%, triggering an unusual value for IRIS Ratio 2.

Schedule F, Part 3 and the reinsurance note to the financial statements identify reinsurance contracts with high provisional commission rates so that the regulator may investigate these contracts and determine if they are being used to mask high operating leverage.

We note that IRIS Ratio 4 (surplus aid to policyholders surplus) is another statistic that can identify companies that rely heavily on reinsurance for surplus relief. As explained in Appendix I of this publication, IRIS Ratio 4 provides the ratio of surplus aid to policyholders

surplus. Surplus aid is the amount of surplus enhancement in the current year attributed to ceding commission (both fixed and contingent) that has been taken into income on ceded unearned premium. Ratios of surplus aid to policyholders surplus in excess of 15% are considered unusual and trigger regulatory scrutiny.

In either of our examples (with the 35% ceding commission being either fixed or provisional), IRIS Ratio 4 would be computed as 39% at the onset of the contract, well in excess of the 15% benchmark.[68] This further illustrates the company's heavy use of reinsurance as surplus relief, masking considerable growth and uncertainty in results.

SCHEDULE F — PART 4: AGING OF CEDED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR (000 OMITTED)

Part 4 is titled "Aging of Ceded Reinsurance as of December 31, Current Year (000 Omitted)." It provides a breakdown by age of the paid loss and LAE amounts recoverable from the insurance company's reinsurers that are shown in columns 7 (reinsurance recoverable on paid loss) and 8 (reinsurance recoverable on paid LAE) of Schedule F, Part 3. The reinsurers are grouped and categorized in the same authorized/unauthorized segments as Part 3.

This schedule provides one of the items that is considered in determining the provision for reinsurance in Part 7, and columns 8 and 9 (amounts greater than 90 days overdue) are used directly in Part 5.

Paid loss and LAE recoverables are provided in the following age categories:

- Current (column 5)
- 1 to 29 days (column 6)
- 30 to 90 days (column 7)
- 91 to 120 days (column 8)
- Over 120 days (column 9)

The total amount of paid loss and LAE recoverable that is overdue (columns 6 through 9) is provided in column 10. The total amount of paid loss and LAE recoverable that is due (current in column 5 plus overdue in column 10) is provided in column 11. The amount in column 11 ($426 in total; 000 omitted) reconciles to the amount in column 7 (recoverable on paid loss) plus column 8 (recoverable on paid LAE) in Schedule F, Part 3 ($426 + $0 = $426 in total; 000 omitted) and Page 2, line 16.1 (amounts recoverable from reinsurers; $426,000). As stated previously, paid loss and LAE recoverables are assets of the reporting entity.

According to the NAIC Annual Statement Instructions, the age of the recoverable is based on the following:

[68] IRIS Ratio 4 is computed as the unearned premium reserve of $45 million multiplied by the 35% ceding commission and divided by policyholders surplus of $40.75 million.

- The terms of the reinsurance contract as to when claims are to be paid by the reinsurer, if specified
- The terms of the reinsurance contract as to when claims are to be reported by the insurance company to the reinsurer, if specified
  Or
- The date when the amount recoverable exceeds $50,000 for a particular reinsurer and is entered in the insurance company's financial accounts as a paid recoverable

If the amount recoverable is less than $50,000, and the aforementioned paid/reported dates are not specified in the contract, then the recoverable is reported in column 5 as currently due.

Note that recoverables from mandatory pools and associations are reported in Column 5 as currently due.

Columns 12 and 13 of Part 4 provide percentages of the overdue balances to total amounts due. Column 12 provides the percentage overdue relative to the total due (column 10 divided by column 11), and column 13 provides the percentage overdue greater than 120 days to the total due (column 9 divided by column 11). These percentages are used in the calculation of the provision for reinsurance.

SCHEDULE F — PART 5: PROVISION FOR UNAUTHORIZED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR (000 OMITTED)

As explained in the "Overview" section of this chapter, the provision for reinsurance is a minimum reserve that is calculated under SAP to reflect an estimate of recoveries under the reporting entity's reinsurance contract(s) that it will not be able to collect. The provision is calculated on Schedule F, Part 7 and comprises two elements:

1. Provision for unauthorized reinsurance, which comes from Part 5, column 20
2. Provision for overdue authorized reinsurance, which itself comprises two components, one coming from Part 6 and the other from Part 7:
   - Part 7 provides the provision for what Sholom Feldblum refers to as "slow-paying" authorized reinsurers.[69] These are reinsurers where the ratio of reinsurance recoverable on paid losses and LAE more than 90 days overdue represents greater than 20% of total reinsurance recoverable on paid losses and LAE plus amounts received in the 90 days prior to December 31, current year.
   - Part 6 provides the provision for authorized insurers where the aforementioned ratio is less than 20%.

[69] Feldblum, S., "Reinsurance Accounting: Schedule F," CAS Exam Study Note, April 2003, 8th Edition, page 22.

There is more to come on the provision for overdue authorized reinsurance when we discuss Parts 6 and 7. For now we will focus on the provision for unauthorized reinsurance that is computed in Schedule F, Part 5.

Provision for unauthorized reinsurance

The provision for unauthorized reinsurance requires that the insurance company establish a liability to protect against the inability to collect on amounts due from a reinsurer not authorized by the insurance company's jurisdiction to write business and therefore not regulated by that jurisdiction. The liability is determined equal to the sum of:

- The total amount of reinsurance recoverable from each reinsurer, offset by any forms of security (or other allowable offsets such as trust funds) for that reinsurer (i.e., unsecured recoverable)
- The lesser of the offsets and 20% of amounts recoverable on paid losses that are more than 90 days overdue not in dispute (i.e., the late payers)
- The lesser of the offsets and 20% of the amount of recoverables in dispute

To put it another way, the liability is equal to total recoverable from unauthorized reinsurers, reduced for allowable offsets only to the extent that there are no amounts in dispute or more than 90 days due (and not in dispute). Otherwise, the allowable offsets are reduced by 20% of amounts due from late payers and 20% of amounts recoverable that are in dispute. Late payers and those that dispute coverage are more likely not to pay than those unauthorized reinsurers that have a history of paying on time and where no amounts are currently in dispute. For each reinsurer, the liability is capped at the total amount of reinsurance recoverable from that reinsurer. However, according to the Annual Statement Instructions, a higher amount could be entered if the insurance company's experience suggests that a higher amount is appropriate.

We note that the Appointed Actuary comments on the collectability of reinsurance in the Statement of Actuarial Opinion. However, a large provision for reinsurance would not always mean there is a collectability issue. Just because a reinsurer is not authorized to transact business in the jurisdiction in which the reporting entity operates doesn't mean that the reinsurer is not viable and will not pay claims owed under the terms of the reinsurance contract.

The following provides the calculation of the Provision for Unauthorized Reinsurers for several reinsurers included in Schedule F, Part 5 of the 2011 Annual Statement for Fictitious Insurance Company. Note that the recoverable amounts in dispute provided in the footnotes to Schedule F, Part 5 relate to Reinsurer C. There are no other recoverables in dispute with any of Fictitious' other reinsurers.

The first example is Reinsurer A, which is an unaffiliated unauthorized reinsurance company of Fictitious located in the U.S. Reinsurer A is more than 90 days late in reimbursing Fictitious for $5,000 in paid loss and LAE. We have mimicked the calculation of the provision for unauthorized reinsurance (Part 5, Column 20) for Reinsurer A in the following table. To illustrate the calculations for a single reinsurer, we show the Schedule F columns in rows.

TABLE 22

Schedule F — Part 5
Provision for Unauthorized Reinsurance as of December 31, Current Year (000 omitted)
Example #1: Reinsurer A from Schedule F — Part 5 of the 2011 Annual Statement for Fictitious Insurance Company

Col. #	Heading	Amount
5	Reinsurance Recoverable on all Items, Schedule F, Part 3, Col. 15	42
6	Funds Held By Company Under Reinsurance Treaties, Schedule F, Part 3, Col. 19	20
7	Letters of Credit	–
11	Ceded Balances Payable, Schedule F, Part 3, Col. 16	–
12	Miscellaneous Balances	–
13	Other Allowed Offset Items	–
14	Cols. 6 + 7 + 11 + 12 + 13 but not in Excess of Col. 5	20
15	Subtotal Col. 5 minus Col. 14	22
16	Recoverable on Paid Losses & LAE Expenses Over 90 Days Past Due not in Dispute	5
17	20% of Amount in Col. 16	1
18	Smaller of Col. 14 or Col. 17	1
19	Smaller of Col. 14 or 20% of Amount in Dispute Included in Col. 5	–
20	Total Provision for Unauthorized Reinsurance Smaller of Col. 5 or Cols. 15 + 18 + 19	23

As displayed above, included within Fictitious Insurance Company's Total provision for unauthorized reinsurance in Column 20 of Schedule F, Part 5 is $23,000 for Reinsurer A. This was computed by taking all items recoverable of $42,000 and reducing by the amount of offsets, which in this case are funds held by Fictitious of $20,000, plus 20% of the amount of recoverable on paid loss and LAE over 90 days past due (and not in Dispute).

Reinsurer C is also an unauthorized U.S. reinsurer of Fictitious. The difference between Reinsurer A and Reinsurer C is that Reinsurer C is not late in paying Fictitious, but is in dispute with Fictitious over $50,000 of the $148,000 of recoverable. The following shows how the provision for unauthorized reinsurance is calculated for Reinsurer C.

TABLE 23

Provision for Unauthorized Reinsurance as of December 31, Current Year (000 omitted)
Example #2: Reinsurer C from Schedule F – Part 5 of the 2011 Annual Statement for Fictitious Insurance Company

Col. #	Heading	Amount
5	Reinsurance Recoverable on all Items, Schedule F, Part 3, Col. 15	148
6	Funds Held By Company Under Reinsurance Treaties, Schedule F, Part 3, Col. 19	20
7	Letters of Credit	–
11	Ceded Balances Payable, Schedule F, Part 3, Col. 16	3
12	Miscellaneous Balances	–
13	Other Allowed Offset Items	–
14	Cols. 6 + 7 + 11 + 12 + 13 but not in Excess of Col. 5	23
15	Subtotal Col. 5 minus Col. 14	125
16	Recoverable on Paid Losses & LAE Expenses Over 90 Days Past Due not in Dispute	–
17	20% of Amount in Col. 16	–
18	Smaller of Col. 14 or Col. 17	–
19	Smaller of Col. 14 or 20% of Amount in Dispute Included in Col. 5	10
20	Total Provision for Unauthorized Reinsurance Smaller of Col. 5 or Cols. 15 + 18 + 19	135
Footnotes:		
1.	Amounts in dispute totaling $50,000 are included in Column 5.	50
2.	Amounts in dispute totaling $……0 are excluded in Column 13.	–

As with Reinsurer A, the calculation starts by reducing the $148,000 total reinsurance recoverables by the amount of allowable offsets, which in this case are funds held totaling $20,000 and ceded balances payable by Fictitious to Reinsurer C of $3,000. Added to this balance is 20% of the amount that Fictitious and Reinsurer C are in dispute over, $50,000. The total provision for Reinsurer C is $135,000.

Remember, the total provision for unauthorized reinsurance in Column 20 is capped at the total amount of Reinsurance Recoverables in Column 5 for any given unauthorized reinsurer. If, for example, Fictitious did not hold any funds on behalf of Reinsurer C, then the offsets would only be $3,000, and the addition for amounts overdue and in dispute (totaling $10,000) would cause the provision to be in excess of the total recoverable. In this case, the provision for unauthorized reinsurance would be capped at the $148,000.

Reinsurer E is unauthorized to transact business in the U.S.; however, the provision for unauthorized reinsurance is $0 in this case. The reason is that Reinsurer E has allowable offsets that in total equal the amount of reinsurance recoverable ($170,000). Further, Reinsurer E is not overdue in any of its payments to Fictitious and is currently believed to be in agreement with the amount of recoverable. The calculation of the provision for unauthorized reinsurance for Reinsurer E is displayed below.

TABLE 24

Provision for Unauthorized Reinsurance as of December 31, Current Year (000 omitted)
Example #3: Reinsurer D from Schedule F – Part 5 of the 2011 Annual Statement for Fictitious Insurance Company

Col. #	Heading	Amount
5	Reinsurance Recoverable on all Items, Schedule F, Part 3, Col. 15	170
6	Funds Held By Company Under Reinsurance Treaties, Schedule F, Part 3, Col. 19	100
7	Letters of Credit	68
11	Ceded Balances Payable, Schedule F, Part 3, Col. 16	2
12	Miscellaneous Balances	–
13	Other Allowed Offset Items	–
14	Cols. 6 + 7 + 11 + 12 + 13 but not in Excess of Col. 5	170
15	Subtotal Col. 5 minus Col. 14	0
16	Recoverable on Paid Losses & LAE Expenses Over 90 Days Past Due not in Dispute	–
17	20% of Amount in Col. 16	–
18	Smaller of Col. 14 or Col. 17	–
19	Smaller of Col. 14 or 20% of Amount in Dispute Included in Col. 5	–
20	Total Provision for Unauthorized Reinsurance Smaller of Col. 5 or Cols. 15 + 18 + 19	0

SCHEDULE F – PART 6: PROVISION FOR OVERDUE AUTHORIZED REINSURANCE AS OF DECEMBER 31, CURRENT YEAR

Provision for overdue authorized reinsurance

We just discussed one element of the provision for reinsurance, that being the provision for unauthorized reinsurance. Here we will begin the discussion of the other element, the provision for overdue authorized reinsurance. The provision for overdue authorized reinsurance comprises two components, one coming from Part 6 and the other from Part 7.

Similar to that for overdue unauthorized reinsurance, for purposes of calculating the provision for overdue authorized reinsurance, "overdue" reinsurance is that for which the amount of paid loss and LAE recoverable is over 90 days past due for reasons other than dispute between the insurance company and the reinsurer. Part 6 only includes those authorized reinsurers in Part 4 where the amount of paid recoverable is overdue.

The piece of the provision for overdue authorized reinsurance that comes from Part 6 comprises overdue authorized reinsurance that represents *less than 20%* the total recoverable on paid loss and LAE (plus amounts received by the insurance company from that reinsurer in the prior 90 days). For these reinsurers, most of the payments are less than three months late. This of course is not as great of a concern from a collectibility standpoint as is the situation where the majority of the amount overdue from a reinsurer is greater than 90 days (i.e., the "slow payers"); the likelihood of the reinsurer reimbursing the insurance company is less as time goes on. Schedule F, Part 7 provides the provision for slow payers

(i.e., authorized reinsurers where the amount of paid loss and LAE recoverable more than 90 days overdue represents more than 20% of the total recoverable on paids).

Column 11 of Part 6 provides the provision for overdue authorized reinsurance as of December 31, current year, for authorized reinsurers where the amount of recoverable on paid loss and LAE more than 90 days overdue represents *less than 20%* of the total recoverable on paid loss and LAE (plus amounts received by the insurance company from that reinsurer in the prior 90 days). The provision for overdue authorized reinsurance in column 11 of Part 6 is calculated as 20% of (1) the amount of reinsurance recoverable on paids more than 90 days overdue plus (2) amounts in dispute excluded from the recoverable on paids more than 90 days overdue for those authorized reinsurers where the amount overdue represents less than 20% of the total. This is equal to 20% of the amount reported in column 8 plus the amount reported in column 10.

Notice for authorized reinsurers where the payments are more than 90 days past due, the provision in column 11 focuses on paid losses and LAE, or slow payers. This contrasts with unauthorized reinsurers, where the provision is based on the total recoverable (i.e., that for slow payers and for unpaid loss and LAE).

For Fictitious Insurance Company, "Slightly Overdue Reinsurer" is the only authorized reinsurer for which loss and LAE payments are overdue in 2011 *and* for which the overdue amount represents *less than 20%* the total recoverable on paid. The following provides the calculation of the provision for overdue authorized reinsurance for Slightly Overdue Reinsurer as per the 2011 Schedule F, Part 6 of Fictitious Insurance Company.

TABLE 25

Provision for Overdue Authorized Reinsurance as of December 31, Current Year
Example: Reinsurer "Slightly Overdue" from Schedule F – Part 6 of the 2011 Annual Statement for Fictitious Insurance Company

Col. #	Heading	Amount
4	Reinsurance Recoverable on Paid Losses and LAE More Than 90 Days Overdue (a)	1,000
5	Total Reinsurance Recoverable on Paid Losses and Paid LAE (b)	59,850
6	Amounts Received Prior 90 Days	–
7	Col. 4 divided by (Cols. 5 + 6)	1.7%
8	Amounts in Col. 4 for Companies Reporting less than 20% in Col. 7	1,000
9	Amounts in Dispute Excluded from Col. 4 for Companies Reporting less than 20% in Col. 7	4,000
10	20% of Amount in Col. 9	800
11	Amount Reported in Col. 8 x 20% + Col. 10	1,000
Footnotes:		
(a)	From Schedule F – Part 4 Columns 8 + 9, total authorized, less $4,000 in dispute.	–
(b)	From Schedule F – Part 3 Columns 7 + 8, total authorized, less $4,000 in dispute.	–

As displayed in column 7, 1.7% of the total amounts recoverable from Slightly Overdue Reinsurer on paid loss and LAE are more than 90 days overdue. As a result, 20% of overdue payments (20% of $1,000, or $200) plus 20% of the amounts in dispute excluded from the overdue paids (20% of $4,000, or $800) is included in the provision for overdue authorized reinsurance.

SCHEDULE F – PART 7: PROVISION FOR OVERDUE REINSURANCE AS OF DECEMBER 31, CURRENT YEAR

The purpose of Part 7 is twofold:

1. To calculate the provision for overdue authorized reinsurers for slow payers (i.e., where recoverable on paids are greater than 90 days past due represents greater than 20% of total reinsurance recoverable on paid losses and LAE plus amounts received in the 90 days prior to December 31, current year) in line 2 ($45,000)
2. To calculate the total liability recorded by the insurance company for the provision for reinsurance, both authorized and unauthorized, in line 6 that is recorded on page 3, line 16 ($283,000)

Part 7, line 2 is computed as 20% of the amount in line 1, which in turn is equal to the total in column 12. Column 12 is computed as the maximum of (1) reinsurance recoverable on all items less offsets and (2) the amount recoverable on paid losses and LAE greater than 90 days past due. Similar to Part 6, the provision for overdue authorized reinsurers in Part 7 considers reinsurance recoverables on paid loss and LAE greater than 90 days overdue.

However, Part 7 also considers all recoverables from the reinsurer, less allowable offsets. In Part 7, the greater of all items recoverable, less offsets, and paid recoverables more than 90 days due, is used in the calculation of the provision.

Lines 1 through 6 of Fictitious' Schedule F, Part 7 are shown below.

TABLE 26

1.	Total	225,000
2.	Line 1 x .20	45,000
3.	Schedule F — Part 6 Col. 11	1,000
4.	Provision for Overdue Authorized Reinsurance (Lines 2 + 3)	46,000
5.	Provision for Unauthorized Reinsurance (Schedule F Part 5, Col. 20 x 1,000)	237,000
6.	Provision for Reinsurance (Sum Lines 4 + 5) (Enter this amount on page 3, line 16)	283,000

The following tables provide a listing of the column headings within Schedule F, Part 7, along with the calculation of the provision for overdue authorized reinsurance for Fictitious' two slow-paying reinsurers: "Overdue Reinsurer" and "Foreign Authorized."

TABLE 27

Example #1: Overdue Reinsurer from Schedule F — Part 7 of the 2011 Annual Statement for Fictitious Insurance Company

Col. #	Heading	Amount
4	Reinsurance Recoverable on all Items, Schedule F, Part 3, Col. 15 *1,000	745,000
5	Funds Held By Company Under Reinsurance Treaties, Schedule F, Part 3, Col. 19 *1,000	–
6	Letters of Credit	515,000
7	Ceded Balances Payable, Schedule F, Part 3, Col. 16 * 1,000	13,000
8	Other Miscellaneous Balances	–
9	Other Allowed Offset Items	–
10	Sum of Cols. 5 through 9 but not in Excess of Col. 4	528,000
11	Subtotal Col. 4 minus Col. 10	217,000
12	Greater of Col. 11 or Schedule F - Part 4 Cols. 8 + 9	217,000

TABLE 28

Example #2:	Foreign Authorized from Schedule F — Part 7 of the 2011 Annual Statement for Fictitious Insurance Company	
Col. #	Heading	Amount
4	Reinsurance Recoverable on all Items, Schedule F, Part 3, Col. 15 *1000	2,411,000
5	Funds Held By Company Under Reinsurance Treaties, Schedule F, Part 3, Col. 19 *1000	–
6	Letters of Credit	2,500,000
7	Ceded Balances Payable, Schedule F, Part 3, Col. 16 * 1000	255,000
8	Other Miscellaneous Balances	–
9	Other Allowed Offset Items	–
10	Sum of Cols. 5 through 9 but not in Excess of Col. 4	2,411,000
11	Subtotal Col. 4 minus Col. 10	–
12	Greater of Col. 11 or Schedule F - Part 4 Cols. 8 + 9	8,000

As displayed in Tables 27 and 28, included within Fictitious Insurance Company's Total provision for overdue authorized reinsurance in column 12 and line 1 of Schedule F, Part 7 of $225,000 is $217,000 for Overdue Authorized and $8,000 for Foreign Authorized. These reinsurers are on this schedule because the amount of reinsurance recoverables on paids more than 90 days overdue represents over 20% of total recoverable from each (100% and 23.5% , respectively as calculated by dividing the sum of columns 8 and 9 by column 11 on Schedule F, Part 4).

To illustrate in words, the provision for overdue authorized reinsurers for Overdue Reinsurer is computed taking the maximum of the total reinsurance recoverable of $745,000 reduced for allowable offsets totaling $528,000, and the amount of recoverable on paids more than 90 days overdue totaling $9,945 per Schedule F, Part 6, column 4 and Schedule F, Part 4, columns 8 plus 9 (multiplied by 1,000). The corresponding formulas are as follows:

= Maximum [Total reinsurance recoverable on all items - Allowable offsets; Recoverable on paid loss and LAE more than 90 days overdue]

= Maximum [$745,000 - $528,000 = $217,000; $9,945]

The sum of the amounts for authorized slow payers is multiplied by 20% prior to inclusion in the total provision for reinsurance. That is, the provision for Overdue Reinsurer of $217,000, and the provision for Foreign Authorized of $8,000 are added together and multiplied by 20% to obtain the provision for authorized slow payers of $45,000 (20% * $225,000), per line 2 of Schedule F, Part 7.

The final provision for reinsurance in line 6 of Schedule F, Part 7, which is equal to the recorded on Liabilities, Surplus and Other Funds on Page 3, line 16 ($283,000) of the Annual

Statement, is equal to the sum of the following two items, which are displayed on Schedule F, Part 7:

1. Provision for overdue authorized reinsurance (totaling $46,000 per line 4)
2. Provision for unauthorized reinsurance (totaling $237,000 per line 5, which is derived in Column 17 of Schedule F – Part 5 multiplied by 1,000)

The provision for overdue authorized reinsurance (totaling $46,000 per line 4) is equal to the provision for overdue authorized for slow payers from Part 7 ($45,000) plus the provision for all other overdue authorized reinsurers (those where recoverable on paids more than 90 days overdue represents less than 20% of total recoverables on paids) from Part 6 ($1,000).

The provision for reinsurance is a series of intricate calculations. The following provides a formulaic version of the provision to provide a more simplified view of the calculations. The formulas are provided separately for each of the three major components of the calculations (unauthorized, authorized non-slow paying and authorized slow paying). The calculations are performed separately for each reinsurer within each component. The sum of the results of each component provides the total provision.

Unauthorized reinsurer (Schedule F, Part 5, column 20, total):

= Minimum [(A) and [(A) – (B)]]
+ Minimum [(B) and 20% * (C)]
+ Minimum [(B) and 20% * (D)]

All other overdue authorized reinsurers (non-slow paying; Schedule F, Part 6, column 11, total):

= 20% * [(C) + (D)]

Overdue authorized slow-paying reinsurers (Schedule F, Part 7, line 2):

= 20% * Maximum [(A) – Minimum [(A) and (B)] and (E)]

Where,

(A) = Total reinsurance recoverable on all items (Schedule F, Part 3, column 15)
(B) = Allowable offsets (Schedule F, Part 5, column 14 for unauthorized; Schedule F, Part 7, sum of columns 5 through 9 for authorized slow paying)
(C) = Recoverable on paid loss and LAE greater than 90 days overdue, excluding amounts in dispute (Schedule F, Part 4, columns 8 + 9, excluding (D) as applicable)
(D) = Recoverable on paid loss and LAE in dispute (per footnotes to the associated parts of Schedule F)
(E) = Recoverable on paid loss and LAE greater than 90 days overdue, including amounts in dispute (Schedule F, Part 4, columns 8 + 9)

SCHEDULE F — PART 8: RESTATEMENT OF BALANCE SHEET TO IDENTIFY NET CREDIT FOR REINSURANCE

Part 8 of Schedule F provides a summarized form of the balance sheet with adjustments to restate it on a gross of ceded reinsurance basis. That is, Part 8 provides a snapshot of the balance sheet as if the company had no reinsurance protection.

Part 8 is one page and displays the assets followed by the liabilities. Both the assets and liabilities are in a compressed format for ease of presentation and computation. There are three columns, providing balances for each of the following asset and liability line items:

Column 1: As Reported (Net of Ceded)
This provides the amounts included on page 2 of the Annual Statement, which are net of reinsurance.

Column 2: Restatement Adjustments
This provides the adjustments necessary to put the net amounts in column 1 on a gross of reinsurance basis in column 3.

Column 3: Restated (Gross of Ceded)
This is equal to the sum of columns 1 and 2 and shows the corresponding asset and liability figures on a gross of reinsurance basis.

Adjustments to assets

The asset side of the balance sheet is generally easier to adjust because there are fewer items that require adjustment. This is because certain items relate to direct or assumed business only, and/or certain items are not impacted by the amount of ceded reinsurance a company has. In general, no adjustment is made to the following asset items within Part 8:

- Cash and invested assets (line 1 of Schedule F, Part 8; line 12 of page 2), as these represent balances that the company has on hand or invested, regardless of its ceded reinsurance
- Premiums and considerations (line 2 of Schedule F, Part 8; line 15 of page 2), as these represent uncollected or deferred balances relating to direct written premiums
- Funds held by or deposited with reinsured companies (line 4 of Schedule F, Part 8; line 16.2 of page 2), as these represent balances for business assumed by the company, not ceded
- Other assets (line 5 of Schedule F, Part 8; representing the balance of page 2 not separately identified), as these represent balances that would not change regardless of ceded reinsurance balances, such as title plants, furniture and electronic data equipment

- Protected cell assets (line 7 of Schedule F, Part 8; line 27 of page 2), as these are not related to ceded reinsurance

The only two lines that are affected by the reinsurance adjustments are line 3, reinsurance recoverable on loss and loss adjustment expense payment, and line 6, net amount recoverable from reinsurers. The adjustment in line 3 is simply a reversal of the amount of reinsurance recoverable on loss and LAE such that the balance gross of reinsurance ceded is $0 for this asset. The adjustment for line 6 is a balancing item such that the total adjustments on the liabilities side of the balance sheet equal those on the asset side.

Adjustments to liabilities

With respect to the Liability side of the balance sheet, generally no adjustment is made to the following line items in Part 8:

- Taxes, expense, and other obligations (line 10 of Schedule F, Part 8; lines 4 through 8 of page 3), as these are generally applied to direct writings
- Advance premium (line 12 of Schedule F, Part 8; line 10 of page 3), as this represents balances that the company has received in advance on its direct writings
- Dividends declared and unpaid (line 13 of Schedule F, Part 8; line 11.1 and 11.2 of page 3), as dividends are not affected by the ceded reinsurance balances
- Amounts withheld or retained by company for account of others (line 16 of Schedule F, Part 8; line 14 of page 3), as these balances are not related to ceded reinsurance
- Other liabilities (line 18 of Schedule F, Part 8; representing the balance of the liabilities on page 3 not separately identified), as these are unrelated to ceded reinsurance

Adjustments are made for the following lines:

Line 9: Losses and LAE (lines 1 through 3 of page 3)
These balances are stated net on a company's statutory balance sheet. The adjustment puts the balances on a gross of reinsurance basis. For companies that are not involved in intercompany pooling arrangements, the adjustment equals the ceded case and IBNR figures from Schedule P, Part 1, Summary, total, columns 14, 16, 18, 20 and 22.

Line 11: Unearned premiums (line 9 of page 3)
These balances are stated net on a company's statutory balance sheet. The adjustment puts the balances on a gross of reinsurance basis. The source of the ceded unearned premium reserve is Schedule F, Part 3, column 13, multiplied by 1,000. The ceded balance is also provided within the

parenthetical reference on the Liabilities, Surplus and Other Funds page of the Annual Statement (page 3) on line 9.

Line 14: Ceded reinsurance premiums payable (line 12 of page 3)
If we ignore ceded reinsurance, as is the purpose of Part 8, then the company will not have any ceded reinsurance premiums payable. The adjustment reverses the amount in column 1.

Line 15: Funds held by company under reinsurance treaties (line 13 of page 3)
Similarly, if we don't have any ceded reinsurance treaties, then the company won't have any funds held related to these treaties. The adjustment reverses the amount in column 1.

Line 17: Provision for reinsurance (line 16 of page 3)
This is the Schedule F "penalty," as computed in Schedule F, Part 7. If the company is assumed to have no reinsurance protection in Part 8, then there will be no provision for reinsurance. The adjustment reverses the amount in column 1.

Surplus

Surplus remains unadjusted in Part 8, as such, the adjustment amount is shown as "XXX" in column 2 and the amount in column 3 equals that in column 1.

Totals

The totals shown in column 1, line 22 of Part 8, balance to the totals shown on line 38 of page 3 of the Annual Statement. The total is equal to the difference between the total assets and total liabilities of the company. This calculation follows through to column 3, with the new total being on gross of reinsurance basis.

The following provides Schedule F, Part 8 for Fictitious Insurance Company.

TABLE 29

Schedule F — Part 8
Annual Statement for the year 2011 of the Fictitious Insurance Company
Restatement of Balance Sheet to Identify Net Credit for Reinsurance

		1 As Reported (Net of Ceded)	2 Restatement Adjustments	3 Restated (Gross of Ceded)
Assets (page 2, Col. 3)				
1.	Cash and invested assets (Line 12)	87,825,000	0	87,825,000
2.	Premiums and considerations (Line 15)	7,990,000	0	7,990,000
3.	Reinsurance recoverable on loss and loss adjustment expense payments (Line 16.1)	426,000	(426,000)	0
4.	Funds held by or deposited with reinsured companies (Line 16.2)	0	0	0
5.	Other assets	3,759,000	0	3,759,000
6.	Net amount recoverable from reinsurers	0	10,595,000	10,595,000
7.	Protected cell assets (Line 27)	0	0	0
8.	Totals (Line 28)	100,000,000	10,169,000	110,169,000
Liabilities (page 3)				
9.	Losses and loss adjustment expenses (Lines 1 through 3)	51,557,000	10,142,000	61,699,000
10.	Taxes, expenses, and other obligations (Lines 4 through 8)	1,932,000	0	1,932,000
11.	Unearned premiums (Line 9)	11,895,000	920,000	12,815,000
12.	Advance premiums (Line 10)	0	0	0
13.	Dividends declared and unpaid (Lines 11.1 through 11.2)	1,562,000	0	1,562,000
14.	Ceded reinsurance premiums payable (net of ceding commissions) (Line 12)	440,000	(440,000)	0
15.	Funds held by company under reinsurance treaties (Line 13)	170,000	(170,000)	0
16.	Amounts withheld or retained by company for account of others (Line 14)	308,000	0	308,000
17.	Provision for reinsurance (Line 16)	283,000	(283,000)	0
18.	Other liabilities	829,000	0	829,000
19.	Total liabilities excluding protected cell business (Line 26)	68,976,000	10,169,000	79,145,000
20.	Protected cell liabilities (Line 27)	0	0	0
21.	Surplus as regards policyholders (Line 37)	31,024,000	0	31,024,000
22.	Totals (Line 38)	100,000,000	10,169,000	110,169,000

As displayed above, the asset items are adjusted in column 2 for:

- Reinsurance recoverable on loss and LAE payments in line 3, totaling $426,000
- The net amount recoverable from reinsurers in line 6, totaling $10,595,000

The amount in line 6, column 2, is simply a reversal of the balance shown in column 1, and therefore the asset side of the balance sheet. The amount in line 6 is computed as the "plug," such that the total adjustment to the assets in line 8 equals the total adjustment to the liabilities in line 19.

The liability items are adjusted in column 2 for:

- Loss and LAE in line 9, totaling $10,142,000
- Unearned premiums in line 11, totaling $920,000
- Ceded reinsurance premiums payable in line 14, totaling $440,000
- Funds held by company under reinsurance treaties in line 15, totaling $170,000
- Provision for reinsurance in line 17, totaling $283,000

The amount in line 9, column 2, is equal to the amount of ceded loss and LAE reserves per Schedule P, Part 1, Summary, of Fictitious' 2011 Annual Statement (sum of the totals in columns 14, 16, 18, 20 and 22).[70]

For companies that do not participate in intercompany pooling, this is equal to the ceded reserve loss and LAE reserve balance in Schedule P, Part 1, Summary. For those that operate in an intercompany pooling arrangement, we note that Schedule P is prepared net of pooling on both a gross and net of external reinsurance basis, whereas Schedule F considers all assumed and ceded reinsurance, including intercompany pooling. As such, it makes it difficult to have full visibility into the loss and LAE reserve balances shown in column 2 of Schedule F, Part 8 for companies participating in intercompany pooling.

The amount in line 11, column 2 is equal to the amount of gross unearned premium reserves that are ceded, as displayed in the total line of Schedule F, Part 3, column 13, multiplied by 1,000.

The amounts in column 2 for lines 14, 15, and 17 represent a reversal of the amount in column 1.

As displayed above, there is no adjustment to surplus; therefore, the amount in column 1 equals that in column 3 ($31,024,000).

CHANGES TO SCHEDULE F IN 2012[71]

As noted, the annual statement instructions referenced and relied upon in this publication are those from 2011. In 2012, the NAIC added a new Part 6 to Schedule F and shifted the former Parts 6 through 8 to Parts 7 through 9, respectively.

[70] Schedule P is prepared net of intercompany pooling on both a gross and net of external reinsurance basis, whereas Schedule F considers all assumed and ceded reinsurance, including intercompany pooling. As such, it makes it difficult to have full visibility into the loss and LAE reserve balances shown in column 2 of Schedule F, Part 8 for companies participating in intercompany pooling arrangements.

[71] NAIC, *Annual Statement Instructions Property/Casualty,* 2012, pages 207-232.

In 2012, the NAIC added a third facet to the "authorized" and "unauthorized" categorization of reinsurers in Schedule F, called "certified." Certified reinsurers are reinsurers that were previously categorized as unauthorized, but since have applied for an attained certification from the reporting entity's domiciliary state as a certified reinsurer. In attaining certification, consideration is made for the reinsurer's jurisdiction, financial position, amount of capital and surplus, regulatory history, financial strength rating(s) from recognized rating agency(ies), among other factors. Once certified, the reinsurer is given a rating that ranges from 1 to 6, called the Certified Reinsurer Rating. A reinsurer with a rating of 1 is considered most secure from a financial strength perspective; a reinsurer with a rating of 6 is considered vulnerable.

The rating defines the amount of collateral that the reinsurer is required to post with the reporting entity. The more secure the certified reinsurer, the less collateral required. For example, a reinsurer with a rating of 1 is not required to post any collateral; a reinsurer with a rating of 6 is required to post 100% of total recoverable due to the reporting entity in collateral. The rating and collateral are used in the calculation of the provision for reinsurance in the new Part 8 of Schedule F (formerly Part 7).

The obvious benefits of this new "certified" category are twofold: (1) the reporting entity does not get "penalized" as much as an unauthorized reinsurer in the provision for reinsurance, and (2) the reinsurer does not have to post as much security with the ceding company.

The new Part 6 has two sections. Section 1 provides the provision for reinsurance ceded to certified reinsurers due to collateral deficiency. This provision is equal to total recoverables from certified reinsurers (from Schedule F, Part 3, column 18) in excess of the amount of credit permitted for recoverables based on the Certified Reinsurer Rating. The amount of credit permitted is based on the amount of collateral actually posted by the reinsurer relative to the amount of collateral required based on its Certified Reinsurer Rating. For example, if a certified reinsurer has a rating of 6, then the reinsurer is required to post 100% of the recoverable in collateral. However, if the reinsurer only posts 75% of the total collateral required, then the reporting entity would record a provision for reinsurance in Section 1 equal to 25% of the recoverables. The 25% represents the deficiency in collateral; 75% represents the amount of credit permitted.

Section 2 of Part 6 provides the provision for overdue reinsurance ceded to certified reinsurers. As with authorized and unauthorized reinsurers, overdue reinsurance ceded is defined as recoverable on paid losses and LAE more than 90 days overdue per columns 8 and 9 of Schedule P, Part 4. The provision is calculated as:

= Minimum [Maximum [20% * (C) + 20% * (D) and 20% of (F)] and (G)],

where (C) and (D) are as defined previously in this chapter and:

(F) = net[72] unsecured recoverable for slow payers for which credit is permitted (Schedule F, new Part 6, Section 2, column 11 minus column 12); and

(G) = amount of credit permitted for net recoverable (Schedule F, new Part 6, Section 1, column 22).

The new Part 8 in 2012 (formerly Schedule F, Part 7) has two more lines in the calculation of the provision for reinsurance (lines 6 and 7) to account for the provision for certified reinsurers, as displayed below.

TABLE 30

Schedule F, Part 8, lines 1 through 8	
1	Total (Schedule F-Part 8, Col. 12, Total
2	Line 1 x .20
3	Schedule F-Part 7 Col. 11
4	Provision for Overdue Authorized Reinsurance (Lines 2 + 3)
5	Provision for Unauthorized Reinsurance (Schedule F-Part 5, Col. 20 x 1,000)
6	Provision for Reinsurance Ceded to Certified Reinsurers (Schedule F, Part 6, Section 1, Col. 23 x 1,000)
7	Provision for Overdue Reinsurance Ceded to Certified Reinsurers (Schedule F, Part 6, Section 2, Col. 15 x 1,000)
8	Provision for Reinsurance (sum Lines 4 + 5 + 6 + 7) (Enter this amount on Page 3, Line 16)

Reporting entities that have certified reinsurance need to bifurcate ceded balances pre- and post-certification periods in the new Schedule F. The amount of collateral and Schedule F penalty are determined separately based on the pre- and post-certification balances and requirements for each reinsurer. The amounts pre-certification will be reported within Part 5 as unauthorized reinsurance, and the amounts post-certification will be reported in Part 6.

As of the summer of 2013, not all states have enacted the NAIC model laws, which permit consideration for certified reinsurers: Credit for Reinsurance Model Law (#785) and Credit for Reinsurance Model Regulation (#786). Schedule F, Part 6 is only used by those reporting entities whose domiciliary state has adopted the model law(s); all other reporting entities will report "NONE" in Part 6. Given its newness, and the fact that the NAIC model laws for certified reinsurers have not been adopted in every state, Part 6 was not applicable for many companies in 2012. Accordingly, our discussion and description has been relatively brief.

[72] Net recoverable from Schedule F, Part 3, column 18 is used in the calculations in Part 6. Column 18 is equal to the total recoverable from Part 3, column 15, less reinsurance payable on ceded balances payable (Part 3, column 16) and reinsurance payable on other amounts due to reinsurers (Part 3, column 17).

SUMMARY

As we have seen, Schedule F is not only important to actuaries in assessing net loss and LAE reserves, but it is also an important tool to the many users of the Annual Statement in solvency monitoring because it:

- Identifies the amount of gross losses that emanate from the reporting entity's assumed reinsurance transactions
- Provides an estimate of the significance of the reporting entity's assumed and ceded reinsurance transactions to its surplus
- Enables further inquiry into the financial strength of the reporting entity's reinsureds and reinsurers
- Identifies those of the reporting entity's reinsurers that may require further scrutiny because they are either slow at paying claims or are not regulated.

Yet, Schedule F is only one of many tools used to monitor solvency by regulators. And as we have stressed throughout this publication, no one tool can be used blindly.

Further, while Schedule F is valuable, it has received some criticism as to how well it meets the regulatory objectives of monitoring solvency for the protection of policyholders.[73] The following are a few of those criticisms:[74]

- The provision for reinsurance is strictly formulaic, potentially masking the true estimate of uncollectible reinsurance that would be determined by company management based on their knowledge of the reinsurers and terms of each contract.
- There is no statistical, historical or actuarial basis for the formula, and its application may not adequately represent an insurer's exposure to collectibility risk.
- Unauthorized reinsurance may provide more and/or higher-quality reinsurance at a lower price than a competing authorized reinsurer.
- Slow payers who are financially strong eventually pay, whereas a reinsurer that is current in its payments may not be able to withstand a stress scenario to its financials.
- The numerous calculations and detail involved in determining the provision for reinsurance can lead to a false level of precision such that the true issue of collectibility risk is overlooked.
- The costs associated with collateral requirements may be passed down to the primary policy, thereby costing the policyholder more for insurance.
- The provisions within Schedule F can limit competition to the U.S. market as a result of the penalty that the European reinsurers bring given that they are unauthorized.

Schedule F does not directly tell us anything about the reinsurer's solvency, which is really the source of collectibility risk.

[73] Statutory Accounting Principles Preamble, paragraph 27.
[74] Feldblum, S., "Reinsurance Accounting: Schedule F," April, 2003, pages 40-47.

CHAPTER 15. SCHEDULE P

OVERVIEW

Schedule P is probably the most important schedule within the Annual Statement to property/casualty actuaries. Schedule P provides details underlying the recorded loss and loss adjustment expense (LAE) reserves on the reporting entity's statutory balance sheet, including 10 years of the company's historical loss and defense and cost containment (DCC) experience. Because the Annual Statement is a public document, Schedule P tends to be a means for outside parties to evaluate the adequacy of recorded reserves, absent loss and LAE data provided directly by the company. And even when detailed data is provided by the company, oftentimes outside parties look to Schedule P for purposes of providing a check on the reasonableness of the recorded balances. However, there are cautions to using this information, and we have presented several within this chapter.

Schedule P has numerous other uses in addition to providing support for the recorded loss and LAE reserves. For example, Schedule P:

- Supports and provides necessary disclosures for the Statement of Actuarial Opinion, including:
  - Direct plus assumed and net loss and expense reserves
  - The amount of anticipated salvage and subrogation (S&S) that the reporting entity takes credit for in its reserves
  - The amount of tabular and non-tabular discount that the reporting entity takes credit for in its reserves
- Shows how loss reserves have developed over time and enables the reader to decipher whether development is attributed to a specific year or line of business
- Provides the source of a company's payment patterns for purposes of discounting reserves for federal income tax
- Shows the split between a company's reserves for known claims and those actuarially determined (i.e., IBNR reserves)
- Provides historical claim count data to facilitate review of trends in claim frequency and severity, as well as changes in claims handling and reserving
- Provides information necessary to compute the loss sensitive discount in the RBC calculation

We will discuss some of these additional uses within this chapter.

ORGANIZATIONAL STRUCTURE

There are seven parts to Schedule P plus interrogatories, as described below.

Part 1 summarizes a company's loss and LAE experience as of December 31 of the current year. It displays a company's loss and LAE reserves, after adjustment for tabular discount if

applicable, and then separately shows the reserves net of all discounts (both tabular and non-tabular). These are the loss and LAE reserves that are recorded on a company's statutory balance sheet (page 3 of the Annual Statement).

For those companies that participate in intercompany pooling, Part 1 displays the pooling percentage.

Part 2 provides a historical display of a company's net ultimate loss and DCC estimates. This enables the user to see how the company's ultimate loss and DCC estimates have developed over time. In a perfect world, the company's ultimate estimate of the cost of incurred claims would remain the same at each evaluation point. However, these are estimates, and therefore have the potential to develop upward or downward as the claims mature. The information provided in Part 2 feeds into the one-year development test in the Five-Year Data Exhibit and is also used in computing IRIS ratios 11, 12 and 13.

Part 3 shows a historical array of the company's net paid loss and DCC experience as of each of the past 10 years. Actuaries can use this information to project unpaid claims using methods such as the paid loss development technique.

The difference between Part 2 (ultimates) and Part 3 (paids) provides a historical array of the company's net loss and DCC reserves as of each of the past 10 years. These amounts are provided *before* tabular discount.

Part 4 displays a company's recorded net IBNR for loss and DCC *before* tabular discount. The difference between Parts 2 and 4 provides a historical array of the company's net reported loss and DCC experience as of each of the past 10 years. This information can be used by actuaries to project unpaid claims using methods such as the case incurred loss development technique.

Part 5 provides a historical array of claim counts as of each of the past 10 years, including claims closed with payment, open claims and reported claims.

Part 6 displays the earning of premium over time, separately on a direct plus assumed and ceded basis. Like the information provided in Parts 2 through 4, the earned premium data is provided in a triangular format enabling the monitoring of premium adjustments over time.

Part 7 provides loss and premium data on loss sensitive contracts, separately for primary and reinsurance contracts, for those lines of business where such contracts are written.

All dollar amounts presented in Schedule P are in thousands (i.e., 000 omitted).

Within the remaining sections of this chapter, we will provide an overview of each part of Schedule P, focusing on those of most relevance to the property/casualty actuary. We will then get into details of those parts, providing relevant examples from the 2011 Schedule P for Fictitious Insurance Company.

SCHEDULE P — PART 1

Part 1 is shown in summary format for all lines of business combined, followed by separate schedules (Parts 1A through 1T) in the same format as Part 1 – Summary, but by Schedule P line of business. The data in Part 1 is provided on a direct plus assumed (gross) and ceded basis and includes premiums earned, paid loss and LAE, case outstanding loss and DCC reserves, and IBNR for loss and LAE. Additionally, incurred loss and LAE ratios are displayed on a gross, ceded and net of reinsurance basis.

One item that is not included in Schedule P is the segregation of gross data into its direct and assumed components. Oftentimes actuaries look for this information separately in performing analyses of unpaid claims however it is not provided in Schedule P. As noted in *Chapter 14. Schedule F*, certain of this information can be provided in Schedule F, Part 1, including assumed case reserves.

Line of Business Segmentation in Part 1

Parts 1A through 1T provide the same information as in Part 1 – Summary, except separately by line of business. The line of business segmentations are as follows:

- A – Homeowners/Farmowners
- B – Private Passenger Auto Liability/Medical
- C – Commercial Auto Liability/Medical
- D – Workers' Compensation
- E – Commercial Multiple Peril
- F – Section 1 – Medical Professional Liability - Occurrence
- F – Section 2 – Medical Professional Liability – Claims-Made
- G – Special Liability (Ocean Marine, Aircraft (All Perils), Boiler & Machinery)
- H – Section 1 – Other Liability - Occurrence[75]
- H – Section 2 – Other Liability – Claims-Made
- I – Special Property (Fire, Allied Lines, Inland Marine, Earthquake, Burglary & Theft)
- J – Auto Physical Damage
- K – Fidelity/Surety
- L – Other (Including Credit, Accident and Health)
- M – International
- N – Reinsurance – Nonproportional Assumed Property[76]
- O – Reinsurance – Nonproportional Assumed Liability[77]

[75] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[76] Property includes fire, allied, ocean marine, inland marine, earthquake, group, credit and other A&H, auto physical damage, boiler and machinery, burglary and theft and international property.
[77] Liability includes farmowners, homeowners and commercial multiperil; medical professional liability workers' compensation; other liability; products liability; auto liability; aircraft (all peril); and international liability.

P – Reinsurance – Nonproportional Assumed Financial Lines[78]
R – Section 1 – Products Liability – Occurrence[79]
R – Section 2 – Products Liability – Claims-Made
S – Financial Guaranty/Mortgage Guaranty
T – Warranty

The definitions of these lines correspond to those on the Exhibit of Premiums and Losses (Statutory Page 14), with the exception of the three nonproportional reinsurance assumed lines (Parts N, O and P), which are not included in Statutory Page 14, as it provides information on a direct basis only. Nonproportional reinsurance assumed is generally excess of loss reinsurance, whereas proportional is generally a form of quota share reinsurance. Proportional reinsurance is included within its respective line(s) of business segments. For example, premiums and losses associated with assumed commercial property reinsurance under a quota share contract would be included within Schedule P, Part 1I. Whereas the same risk assumed on an excess of loss basis would be included within Schedule P, Part 1N.

Only two accident years and a "prior years" row are shown for the following lines due to the limited amount of loss development beyond two years:

I – Special Property (Fire, Allied Lines, Inland Marine, Earthquake, Burglary & Theft)
J – Auto Physical Damage
K – Fidelity/Surety
L – Other (Including Credit, Accident and Health)
S – Financial Guaranty/Mortgage Guaranty
T – Warranty

That is, claims for the aforementioned lines of business are expected to be reported and paid within a relatively short period of time after the occurrence of a claim. Consider the Special Property line of business. If a commercial property is damaged due to fire, the insured will report the claim rather quickly to get the building repaired or rebuilt in order to continue operations. Payments may continue to the insured while the commercial property is being repaired due to business interruption; however, the insured will generally be back in business within the year in which the loss occurred. As a result, losses will develop for 12 to 24 months after the beginning of the accident year (January 1) in which the loss occurred, but typically the claim will be closed by the end of 24 months.

To illustrate the "bucketing" of claims, consider a complete fire loss to a paper mill on December 19, 2011. Assume the building is rebuilt and the insured is back in business on September 4, 2012. This claim would be recorded as an accident year 2011 claim, with loss

[78] Financial includes financial guaranty, fidelity, surety, credit, and international financial.
[79] There is no Part Q.

payments extending into the second year of development (24-month period) until the claim is closed on September 4.

Despite only two years being shown in the Schedule P line of business parts, all 10 years are included in Schedule P – Part 1 – Summary. Therefore the insurer is required to retain data for these lines in a similar 10-year format as all other lines of business in Schedule P.

Many have argued that the two-year reporting convention is not necessarily appropriate for the aforementioned lines of business due to the tail on lines such as Fidelity/Surety. These opponents would vote for including all 10 years, as is shown for the other Schedule P lines, arguing further that all 10 years are already produced for purposes of forming the summaries in Schedule P.

Yearly Reporting Convention

Part 1 provides information related to earned premiums and cumulative loss and LAE data at the current evaluation date (i.e., December 31 of the current year) for the last 10 years in which premiums are earned and losses incurred. Earned premiums are shown by calendar year, and once they are entered in Schedule P, they do not change for retrospective premium adjustments or other adjustments. Losses are shown by:

- Accident year for occurrence policies
- Report year for claims-made policies
- Policy year for tail policies
- Discovery year for fidelity and surety policies

Accident year is defined as the calendar year in which accidents occur and/or losses are incurred. For example, a claim with a date of loss of November 13, 2011, would be a 2011 accident year claim. This reporting convention is used for occurrence-basis policies, where the trigger of coverage is the occurrence of a loss. With occurrence policies, a claim can be reported at any time after the loss occurs, subject to statutes of limitation, as long as the loss occurs during the policy term. For example, an injury that occurred 15 years ago can be reported to the insurer today, and any coverage for that injury would be provided by the terms and conditions of the policy that was in effect 15 years ago.

Report year represents the calendar year in which losses are reported. This is typically used for claims-made policies, as the trigger of coverage is the reporting of a claim or incident to the insurance carrier. In their most basic format, claims-made policies cover claims that are first made during the policy term. As a result, if a claim occurs during the policy period but is not reported by the insured during the policy term, the claim is not covered by the insurance company under the terms and conditions of the policy that was in force at the time the claim occurred. This significantly reduces the uncertainty for the insurance carrier, both for pricing and reserving, since the policy that is in effect at the time the claim is made will be the policy

providing the coverage for the claim, regardless of how long ago the incident took place (provided there is no retroactive date on the policy).

A claims-made policy may have a retroactive date that is before the effective date of the policy, the same as the effective date of the policy or it may have no retroactive date. The retroactive date is the date on or after which the incident must occur in order for it to be covered under the claims-made policy. An incident that occurs before the retroactive date will not be covered by the claims-made policy even if it is first reported during the policy period.

These types of policies are generally issued for medical malpractice, other liability, or products liability coverages because claims covered by these types of policies tend to have a long latency period. It becomes very difficult for insurance companies to project the claim frequency as well as the severity of claims and therefore difficult to price and reserve for an occurrence that will result in a claim many years in the future.

To illustrate the concept of claims-made coverage and the concept of report year, assume a young surgeon purchases a medical malpractice policy on a claims-made basis for the term beginning July 1, 2011, and expiring on June 30, 2012. Assume that the surgeon performs a procedure on his patient on October 21, 2011, and complications arise during the surgery. If the surgeon reports the incident to his insurance carrier before June 30, 2012, and subsequently the surgeon is sued and a claim materializes, he will be covered under his policy in effect from July 1, 2011, through June 30, 2012. This would be a 2011 report year claim for Schedule P reporting purposes. If the surgeon does not report the incident because the patient did not become aware of the complications until a year later, and the claimant decides to sue the physician on August 22, 2012, the surgeon reports this claim to his carrier on August 23, 2012. He would not be covered by the policy in effect from July 1, 2011, through June 30, 2012, as the claim was not reported during the policy term. If the surgeon renewed the claims made policy, the renewal policy that is in effect from July 1, 2012, through June 30, 2013, would be the policy that covers the claim.

In general, the people or companies that purchase claims-made policies do not like to leave themselves exposed to the risk of being uninsured, despite the cost savings of a claims-made policy as compared to an occurrence policy. As a result, they generally purchase something called an extended reporting period or "tail coverage." Tail coverage extends the reporting period of a claims-made policy for an additional period of time, which may be one to five years or an unlimited period of time past the expiration of the claims-made policy. A claims-made policy plus an unlimited extended reporting period essentially turns the claims-made policy into an occurrence policy. To illustrate using our previous example, let's assume that the surgeon does not renew his claims-made policy and therefore purchases unlimited tail coverage on July 1, 2012, when the policy expires. This means that any accident or loss that occurred as a result of error by the surgeon during the period July 1, 2011, through June 30, 2012, would be a covered claim by the insurance company that issued the claims-made

policy regardless of when in the future the surgeon first reports the claim. Without the tail coverage, the surgeon would have no coverage for claims that he learns about on or after July 1, 2012.

Premiums and losses associated with tail policies are included in Schedule P with their associated line on an occurrence basis.

Discovery year is generally used for fidelity and surety policies, as it is difficult to determine the actual date the "loss" occurs. As the name suggests, discovery year represents the calendar year in which a loss or damage is discovered.

For simplicity, and because it is most common, we will use the term accident year in the remainder of our discussion of Schedule P, unless explicitly stated otherwise.

Note that there is also a prior years row in Schedule P, which accumulates loss and expense information into one row within each of the schedules. The prior years row shows paid (received) activity *during* the current year (i.e., calendar year activity) and ending reserves *as of* the evaluation date of the Statement. Within this chapter we provide examples of how to calculate the prior years row; it is a bit trickier than this brief explanation suggests.

Loss Adjustment Expenses

Losses are provided separately from LAE, which is separated into two components: DCC expenses and Adjusting and Other (A&O) expenses. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external, and A&O includes all expenses associated with adjusting and recording policy claims, other than those included with DCC.[80] The following table summarizes the types of expenses by category.

[80] Per the Official NAIC Annual Statement Instructions for 2011, DCC are defined as "those that are correlated with the loss amounts," and A&O are defined as "those expenses that are correlated with claim counts or general loss adjusting expenses."

TABLE 31

DCC	A&O
Surveillance expenses	Fees of adjusters and settling agents
Fixed amounts for medical cost containment	
Litigation management expenses (e.g., audit of bills)	
LAE for voluntary and involuntary pools if reported by accident year	LAE for voluntary and involuntary pools if reported by calendar year
Fees/salaries for: ▸ Appraisers ▸ Private investigators ▸ Hearing representatives ▸ Reinspectors ▸ Fraud investigators (If working in defense of a claim)	Fees/salaries for: ▸ Appraisers ▸ Private investigators ▸ Hearing representatives ▸ Reinspectors ▸ Fraud investigators ▸ Attorneys (If working in the capacity of an adjuster)
Fees/salaries for rehabilitation nurses, if not included with losses	
Attorney fees incurred owing duty to defend	Attorney fees incurred in determination of coverage
Cost of engaging experts, if not included with losses	

The NAIC Instructions to the Annual Statement indicate that DCC should be assigned to accident year in accordance with the associated losses, while for A&O, *"in any justifiable way, … [t]he preferred way is to apportion these expenses in proportion to the number of claims reported, closed, or outstanding each year."*[81] The following table illustrates this using Fictitious' commercial automobile liability line of business as an example. Fictitious allocates its unpaid A&O for commercial automobile liability by applying the distribution of outstanding claim counts by accident year to total unpaid A&O.

[81] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 226.

TABLE 32

Years in Which Premiums Were Earned and Losses Were Incurred		Number of Claims Outstanding Direct and Assumed	Distribution of Outstanding Claims	Direct and Assumed Adjusting & Other Unpaid
1.	Prior	1	1%	2
2.	2002	1	1%	2
3.	2003	1	1%	2
4.	2004	1	1%	2
5.	2005	1	1%	2
6.	2006	1	1%	2
7.	2007	2	3%	4
8.	2008	4	5%	8
9.	2009	7	9%	15
10.	2010	13	18%	27
11.	2011	42	57%	89
	Totals	74	100%	156

Disclosure of the methodology used to allocate A&O by year is required in the interrogatories to Schedule P.

LAE wasn't always segregated between DCC and A&O. Prior to 1988, LAE were stated as either allocated LAE (ALAE) and unallocated LAE (ULAE) in the Annual Statement. ALAE is defined as claim expenses that can be specifically assigned to a particular claim, and ULAE as those that cannot. ULAE is generally associated with the cost of administering claims. The terms ALAE and ULAE are still used in practice. In fact, for reserving purposes many companies perform actuarial analyses on an ALAE/ULAE basis.

Salvage and Subrogation

Most insurance policies require the insured to transfer the right to S&S recovery upon payment of a covered claim to an insured. Salvage is typically received by insurance companies in the case of automobile claims, when the vehicle incurs physical damage that is beyond repair. Here the insurance company can sell usable parts of the vehicle, such as tires, hubcaps and engine parts, to companies that salvage damaged vehicles.

Subrogation is typically received in the case of liability policies. For example, an insurance carrier paying a claimant for liability associated with a product manufactured by an insured, may in turn attempt to recover part or all of the amount paid to the claimant from the company that made a part used in manufacturing the product.

The paid loss figures provided in columns 4 (direct and assumed loss payments) and 5 (ceded loss payments) are net of S&S received, and the unpaid losses provided in columns 13 through 16 are net of anticipated S&S, if the company reduces its reserves for anticipated S&S. We typically find that when companies take credit for anticipated S&S, they do so in the "bulk and IBNR"[82] amounts as opposed to the "case basis" reserves. It is difficult enough to estimate reserves for known claims, let alone the amount that will be recovered for salvage and/or subrogation on those claims.

For statutory reporting purposes, insurance companies can take credit for S&S received, as well as that anticipated in its loss reserves. This means that companies can reduce their reserves by estimates of recoveries that they expect to receive in the future.

The S&S figures displayed in columns 10 (received) and 23 (anticipated) are for informational purposes only. As displayed in the formula for total net paid loss and LAE in column 11, S&S received in column 10 is not subtracted from the paid loss and LAE amounts in columns 4 through 9, as they are already reduced by the S&S received. The following illustrates the calculation on total net paid loss and LAE using data from the total line from Schedule P, Part 1 – Summary of the 2011 Annual Statement for Fictitious Insurance Company.

TABLE 33

Data from 2011 Schedule P — Part 1 — Summary for Fictitious Insurance Company (000 omitted)			
Column	Item	Amount	Notes
4	Direct and assumed loss payments	116,277	
5	Ceded loss payments	16,875	
	Net loss payments	99,402	= Column 4 − Column 5
6	Direct and assumed DCC payments	10,266	
7	Ceded DCC payments	1,067	
	Net DCC payments	9,199	= Column 6 − Column 7
8	Direct and assumed A&O payments	10,830	
9	Ceded A&O payments	417	
	Net A&O payments	10,413	= Column 8 − Column 9
11	Total net paid	119,014	= (Columns 4 + 6 + 8) − (Columns 5 + 7 + 9)

The S&S received figure in column 10 of Schedule P, Part 1 – Summary ($5,283 in total; 000 omitted) does not enter the above calculation, as the loss payments shown in columns 4 and 5 have already been reduced by this amount. The amount shown in column 11 is net of the S&S received amount shown in column 10.

The same goes for the total net loss and LAE unpaid in column 24; anticipated S&S in column 23 is not subtracted from the case and IBNR figures in columns 13 through 22, as it is already

[82] Hereafter we will refer to "bulk and IBNR" simply as "IBNR."

displayed net of anticipated S&S. The following provides a similar illustration using total unpaid amounts from Fictitious' 2011 Schedule P, Part 1 – Summary.

TABLE 34

Data from 2011 Schedule P — Part 1 — Summary for Fictitious Insurance Company (000 omitted)

Column	Item	Amount	Notes
13	Direct and assumed case basis losses	24,945	
14	Ceded case basis losses	5,343	
	Net case basis losses	19,602	= Column 4 − Column 5
15	Direct and assumed IBNR losses	26,330	
16	Ceded IBNR losses	4,038	
	Net IBNR losses	22,292	= Column 6 − Column 7
17	Direct and assumed case basis DCC	2,424	
18	Ceded case basis DCC	258	
	Net case basis DCC	2,166	= Column 8 − Column 9
19	Direct and assumed IBNR DCC	5,401	
20	Ceded IBNR DCC	499	
	Net IBNR DCC	4,902	= Column 8 − Column 9
21	Direct and assumed A&O unpaid	2,599	
22	Ceded A&O unpaid	4	
	Net A&O unpaid	2,595	= Column 8 − Column 9
24	Total net losses and expenses unpaid	51,557	= (Columns 4 + 6 + 8) − (Columns 5 + 7 + 9)

Column 23, which provides anticipated S&S ($1,363 in total; 000 omitted), is not included in the above calculation as the amounts in loss columns are provided on a net basis.

Composition of Loss and LAE Reserve Figures Provided in Schedule P, Part 1

The case and IBNR reserves provided in Part 1 are net of tabular[83] discounting and gross of non-tabular discounting, up until columns 32 and 33. The amount of non-tabular discount is shown separately for loss and LAE in columns 32 and 33, respectively. For Fictitious, the amounts shown in columns 32 and 33 are zero because the Company does not discount non-tabular reserves. This is confirmed in part B of the Note to Financial Statements titled "Discounting of Liabilities for Unpaid Losses or Unpaid Loss Adjustment Expenses" (Note 32B in the 2011 Annual Statement).

The reserves shown on the Balance Sheet are provided in columns 35 and 36 for loss and LAE, respectively. These figures are on a net of reinsurance basis, and net of all discounting,

[83] Tabular reserves are defined on page 159 of the 2011 NAIC Annual Statement Instructions to Note 32 of the Financial Statements as "indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation, or recovery from disability applied to a reasonably determinable payment stream. This definition shall not include medical loss reserves or any loss adjustment expense reserves."

if applicable. The sum of columns 35 and 36 will reconcile to the amount shown in column 24 reduced by the amount of discount shown in columns 32 and 33.

TABLE 35a

Data from 2011 Schedule P - Part 1 - Summary for Fictitious Insurance Company (000 omitted)			
Column	Item	Amount	Notes
	Total net losses unpaid	41,894	Columns (13 + 15) - Columns (14 + 16)
	Total net expenses unpaid	9,663	Columns (17 + 19 + 21) - Columns (18 + 20 + 22)
24	Total net losses and expenses unpaid	51,557	
32	Nontabular discount on losses	XXX	
33	Nontabular discount on loss expense	XXX	
	Total nontabular discount	XXX	= Column 32 + Column 33
35	Net balance sheet loss reserves after discount	41,894	Columns (13 + 15) - Columns (14 + 16 + 32)
36	Net balance sheet loss expense reserves after discount	9,663	Columns (17 + 19 + 21) - Columns (18 + 20 + 22 + 33)
	Total net losses and expenses unpaid after discount	51,557	= Column 35 + Column 36

As we shall see in *Part IV. Statutory Filings to Accompany the Annual Statement* of this publication, Schedule P, Part 1 – Summary provides the source of the recorded reserve amounts that the Appointed Actuary opines upon in the Statement of Actuarial Opinion on behalf of the insurance company. The Appointed Actuary opines on the loss and LAE reserve amounts provided in columns 35 and 36, respectively, on a net of reinsurance basis, and columns 13 plus 15 and columns 17 plus 19 plus 21, respectively, on a gross of reinsurance basis. For Fictitious Insurance Company, the amounts shown in Exhibit A to the 2011 Statement of Actuarial Opinion, on which the Appointed Actuary has provided his opinion, are as follows.

TABLE 35b

Fictitious Insurance Company 2011 Statement of Actuarial Opinion Loss and LAE Reserve Amounts Per Exhibit A		
Loss and LAE Reserves:		Amount
1.	Reserve for Unpaid Losses (Liabilities, Surplus and Other Funds page, Col 1, Line 1)	$41,894,000
2.	Reserve for Unpaid LAE (Liabilities, Surplus and Other Funds page, Col 1, Line 3)	$9,663,000
3.	Reserve for Unpaid Losses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 13 and 15, Line 12 * 1,000)	$51,275,000
4.	Reserve for Unpaid LAE – Direct and Assumed (Should equal Schedule P, Part 1 – Summary, Totals from Cols. 17, 19 and 21, Line 12 * 1,000)	$10,424,000

The figures shown in Schedule P are net of intercompany pooling. As suggested by the "XXX" in column 34, Fictitious does not participate in any intercompany pooling arrangements. This can be confirmed by a reading of the Notes to the Financial Statements titled *"Intercompany Pooling Arrangements"* (Note 26 in the 2011 Annual Statement) for an insurance company. We will discuss the effect of intercompany pooling on Schedule P reporting in a separate section at the end of this chapter.

Incurred loss and LAE

The other items of interest in Schedule P, Part 1 are the total losses and loss expense incurred columns (26 through 28) and resulting loss and LAE ratios columns (29 through 31). The loss ratio columns are useful in assessing historical performance of the business separately on a direct and assumed, ceded and net basis. For companies with non-proportional reinsurance, the loss ratios will differ on a direct and net basis, and one can get a sense if the company is paying relatively more for the reinsurance than the direct risk. Using Fictitious as an example, we see that its incurred loss and LAE ratios differ on a direct plus assumed, ceded and net of reinsurance basis.

TABLE 36

Years in Which Premiums Were Earned and Losses Were Incurred		Loss and Loss Expense Percentage (Incurred/Premiums Earned)		
		29 Direct and Assumed	30 Ceded	31 Net
1	Prior			
2	2002	66.9	71.9	65.6
3	2003	57.7	44.3	61.3
4	2004	52.9	52.6	53.0
5	2005	61.8	106.5	54.3
6	2006	52.1	53.4	51.9
7	2007	54.9	52.2	55.2
8	2008	66.5	65.0	66.6
9	2009	62.8	62.3	62.8
10	2010	68.2	52.5	69.5
11	2011	78.9	72.6	79.4

Since 2007, the Company's ceded loss and expense ratios have been lower than its direct plus assumed ratios, thereby resulting in higher net loss ratios.

We should note that the amounts shown as "incurred" in columns 26 through 31 are on an "ultimate incurred" basis. This is an important definitional distinction from "case incurred," and people often get the two confused, so we will walk through the definitions here.

The following equations are different ways of presenting ultimate incurreds:

Ultimate incurred loss

= Paid loss + case outstanding loss + IBNR loss
= Reported loss + IBNR loss
= Paid loss + unpaid loss

Paid losses represent those amounts paid by the insurance carrier. Case outstanding losses represent the reserve for known claims, which is generally established by the company's claims administrators/adjusters. IBNR represents the reserve for claims Incurred But Not Reported. IBNR includes a provision for:

- Development on known claims ("case development")
- Pure IBNR, or those claims that are incurred but not yet reported to the insurance carriers
- Reopened claims

Case development is intended to cover upward and downward movements in the reserves established by the adjusters as additional information becomes available about the claim. For example, an adjuster may establish an initial reserve for a workers' compensation claim based on the initial injury reports from the employer or claimant's doctor. However, subsequent medical examinations may uncover that the injury is worse than originally expected, resulting in additional cost and the need for an increase in the case reserve estimate to reserve the claim to its ultimate value.

Reported loss is equal to the amount of paid plus case outstanding; it represents the dollar value of loss known to the insurance company. The term "case incurred" is synonymous with "reported" and represents the reported value of known cases.

Unpaid loss (or loss reserve) equals the amount of case outstanding plus IBNR reserves. It represents the remaining amount expected to be paid on claims incurred by the insurance company.

Actuaries often derive an ultimate loss estimate using triangular projection methods. The amount unpaid (or loss reserve) can be derived using the above formulas by subtracting paid losses from the ultimate estimate. Similarly, IBNR can be determined by subtracting reported losses from the ultimate estimate.

Data used in actuarial projections can be derived from the information contained in Parts 2 through 4 of Schedule P, as will be discussed later in this chapter under the heading "Actuarial Projections" within the section "SCHEDULE P – PARTS 2 THROUGH 4."

Claim Count Information in Part 1

Certain line of business subparts of Part 1 also provide claim count information that is not included in Part 1 – Summary because such information is not captured for all lines. Column 12 provides the number of claims reported, direct plus assumed. However, this column only applies to certain lines and may be left blank for others, including the Summary. The applicable lines are:

- Homeowners/Farmowners
- Private Passenger Auto Liability/Medical
- Commercial Auto Liability/Medical
- Workers' Compensation
- Commercial Multiple Peril
- Medical Professional Liability
- Other Liability
- Auto Physical Damage
- Products Liability
- Warranty

Further, column 25 provides the number of claims outstanding, direct plus assumed. This column is completed for all lines except the nonproportional reinsurance assumed lines (Parts N, O and P) and therefore the Summary.

For those lines, including the Summary, where claim count information is not included, the corresponding columns are filled in with "XXX."

Claim count data can be used to explore changes in ultimate loss and LAE or reserve levels or to identify changes in claims settlement or reserving philosophy. We will provide more details in our discussion of Schedule P, Part 5; however, for now we will show the meaningful relationships that can be derived from Schedule P, Part 1 for Fictitious' Homeowners/Farmowners lines of business (Part 1A).

First, it is generally assumed that net claim counts are equal to direct and assumed counts, unless 100% of the business is ceded. The theory is that a direct claim results in a net claim, even if the value of the net claim is $0. Therefore, all ratios that we show below, both on a gross and net of reinsurance basis, are in relation to direct plus assumed counts.

Data from Schedule P, Part 1 can be used to calculate reported claim frequency, which is the relationship of reported claim counts as of December 31, 2011, to earned premium.

TABLE 37

Data From Schedule P — Part 1 — Homeowners & Farmowners
(000 omitted)
Average Reported Claim Frequency

Years in Which Premiums Were Earned and Losses Were Incurred		Earned Premium		Number of Claims Reported Direct and Assumed (Col. 12)	Average Reported Claim Frequency	
		Direct and Assumed (Col. 1)	Net (Col. 3)		Direct and Assumed Counts/Earned Premium	Direct and Assumed Counts/Net Earned Premium
1	Prior	XXX	XXX	XXX	XXX	XXX
2	2002	1,931	1,763	242	0.125	0.137
3	2003	2,251	2,084	253	0.113	0.122
4	2004	2,721	2,612	219	0.081	0.084
5	2005	3,123	3,000	217	0.069	0.072
6	2006	3,307	3,231	216	0.065	0.067
7	2007	3,609	3,507	194	0.054	0.055
8	2008	3,816	3,713	300	0.079	0.081
9	2009	4,003	3,895	296	0.074	0.076
10	2010	4,294	4,178	325	0.076	0.078
11	2011	4,550	4,445	427	0.094	0.096
12	Totals	XXX	XXX	XXX	XXX	XXX

Table 37 can help us identify trends in claim frequency over the accident years. It is not a complete picture because claim counts are on a reported basis, as opposed to ultimate. However, for a short-tailed line of business such as homeowners, where losses are generally reported within the year in which they are incurred (i.e., accident year), it is not a bad approximation. As expected, reported claim frequency appears to have increased in 2011 relative to both gross and net earned premiums (e.g., frequency in 2011 of 0.094 per $000 of gross earned premium versus 2010 of 0.076). This is most likely due to the high frequency of weather-related and catastrophe claims incurred by the Company during 2011.

We note that the interpretation of frequency trends using earned premium can be misleading due to the effect of rate changes. In our example, the increasing trend in Fictitious' claim frequency relative to earned premium may be partly attributed to soft market conditions in addition to the number of catastrophe claims. Viewing claim frequency in terms of exposures (e.g., house years for homeowners) would provide a clearer comparison and enhance the ability to understand observed trends. Regardless, when investigating trends in claim frequency, consideration should be made for changes over time in a company's mix of business (e.g., by types of exposures, geography), policy limits, reinsurance attachment points and limits, as well as the way the company counts its claims.

We can also compute the average value of reported claims by year, with each year evaluated as of December 31, 2011, using Schedule P, Part 1 data, as shown below.

TABLE 38

Data From Schedule P — Part 1 — Homeowners & Farmowners
(000 omitted)
Average Reported Loss and DCC Severity

		Reported Loss and DCC			Average Reported Loss & DCC		Trend in Average Reported $	
Years in Which Premiums Were Earned and Losses Were Incurred		Direct and Assumed (Cols. 4 + 6 + 13 + 17)	Net (Direct - Ceded per Cols. 5 + 7 + 14 + 18)	Number of Claims Reported Direct and Assumed (Col. 12)	Direct and Assumed Reported $/Counts *1000	Net Reported $/Direct and Assumed Counts *1000	Direct and Assumed Severity in Accident Year 20XX+1 divided by 20xx	Net Severity in Accident Year 20XX+1 divided by 20xx
1	Prior	6	6	XXX	XXX	XXX	XXX	XXX
2	2002	1,021	942	242	4,219	3,893		
3	2003	1,170	1,107	253	4,625	4,375	10%	12%
4	2004	1,450	1,381	219	6,621	6,306	43%	44%
5	2005	1,644	1,368	217	7,576	6,304	14%	0%
6	2006	1,350	1,349	216	6,250	6,245	-18%	-1%
7	2007	1,407	1,405	194	7,253	7,242	16%	16%
8	2008	2,186	2,185	300	7,287	7,283	0%	1%
9	2009	2,214	2,208	296	7,480	7,459	3%	2%
10	2010	2,421	2,419	325	7,449	7,443	0%	0%
11	2011	3,372	3,369	427	7,897	7,890	6%	6%
12	Totals	18,241	17,739	XXX	XXX	XXX	XXX	XXX

We see that there hasn't been much of a trend in the average cost per reported claim since 2008, until we get to 2011. The relatively flat trend from 2008 through 2010 is most likely due to economic factors during the time period and general flattening of costs associated with the repair and rebuilding of damaged properties. Similar to the increase in frequency in 2011, the increase in claim costs is primarily attributed to an increase in the size of claims due to the catastrophic events of 2011.

Here again, the comparison does not provide a complete picture because we are comparing accident year data at different levels of maturity rather than evaluating the reported loss and claims counts at their ultimate values. As we shall see, comparisons at the ultimate level can be made by developing loss and DCC data provided in Parts 2 through 4 and claim count data provided in Part 5.

Finally, we can also show the average cost of open claims as of December 31, 2011, using Part 1 data, as provided in the Table 39:

TABLE 39

Data From Schedule P — Part 1 — Homeowners & Farmowners
(000 omitted)
Average Case Outstanding Loss and DCC Severity

Years in Which Premiums Were Earned and Losses Were Incurred		Case Basis Loss and DCC: Direct and Assumed (Cols. 13 + 17)	Case Basis Loss and DCC: Net (Direct – Ceded per Cols. (14 + 18)	Number of Claims Outstanding Direct and Assumed (Col. 25)	Average Case O/S Loss & DCC: Direct and Assumed Case Basis $/Counts *1,000	Average Case O/S Loss & DCC: Net Case Basis $/Direct and Assumed Counts *1,000
1	Prior	4	4	1	4,000	4,000
2	2002	0	0	1	0	0
3	2003	1	1	1	1,000	1,000
4	2004	2	2	1	2,000	2,000
5	2005	3	0	1	3,000	0
6	2006	8	8	1	8,000	8,000
7	2007	18	18	1	18,000	18,000
8	2008	40	40	1	40,000	40,000
9	2009	61	61	1	61,000	61,000
10	2010	124	124	3	41,333	41,333
11	2011	366	366	21	17,429	17,429
12	Totals	627	624	33	19,000	18,909

What we see in Table 39 table is that the case outstanding reserve values and number of open claims generally decrease with maturity (ignoring the prior years row, which is a compilation of all prior years into one line). This makes sense, as eventually all claims will be closed and the outstanding reserves will be $0.[84] We also see that the average case reserves increase in maturity to a certain point, at which they decrease (ignoring the prior years row). This suggests that the claims that remain open after 24 months (accident year 2010 in this case) tend to be the larger dollar-valued claims. Put another way, the claims that cost the least tend to be the easiest to administer and close, while the more costly claims take longer to settle and pay out. This makes sense and is generally the case with property/casualty lines of business. As time goes on, the average case reserve for homeowners claims tends to decrease as the payments decline to closure.

The average case reserve values are lower on accident year 2011 relative to the immediately prior periods. There are still small to midsized claims, in addition to the large dollar-value claims, that remain open on the current accident year. These low-value claims suppress the average.

[84] Sometimes we will see a very high severity in a mature accident year, relative to the surrounding years and the general decreasing trend with maturity. This will happen when there's one or a small number of large dollar-valued claims outstanding.

SCHEDULE P — PARTS 2 THROUGH 4

Parts 2 through 4 provide a historical array of incurred, paid and IBNR loss and DCC, respectively. The data is provided on a net of reinsurance and net of S&S (as applicable) basis.

Similar to Part 1 – Summary, the information in the Summary of Parts 2 through 4 is provided for each of the past 10 years in which losses were incurred using the aforementioned definitions depending on the type of policies (e.g., occurrence, claims-made, tail, or fidelity and surety). The data is evaluated as of December 31 for each of the last 10 years.

Details are provided by line of business in the same breakdowns as in Part 1, with 10 accident years shown for all lines except for those lines previously mentioned (e.g., Special Property, Auto Physical Damage).

Discounting

Parts 2 through 4 of Schedule P are gross of all discounting. Therefore, the reserve amounts shown in Parts 2 through 4 will not reconcile to those provided in Part 1 for companies that discount nontabular reserves. The amount of discount is reported in the Notes to Financial Statements, which enables reconciliation between Part 1 and Parts 2 through 4.

We can illustrate this using Schedule P, Parts 1, 2 and 3, Summary for Fictitious. As displayed in Table 40b, the difference between the total net loss and DCC reserve reported in Schedule P, Part 1 and the amount indicated by subtracting the figures in column 10 of Parts 2 and 3 provides the $1.365 million of reduction for tabular discount taken in Schedule P, Part 1.

TABLE 40a

Data from 2011 Annual Statement for Fictitious Insurance Company			
Years in Which Losses Were Incurred	Net Loss and DCC at Year End per Schedule P (000 omitted)		
	Net Incurred Part 2 Summary	Net Paid Part 3 Summary	Net Unpaid Part 2 – Part 3 Summary
Prior	46,022	30,210	15,812
2002	13,387	12,202	1,185
2003	13,540	12,238	1,302
2004	12,099	10,933	1,166
2005	12,321	10,919	1,402
2006	11,679	9,804	1,875
2007	12,895	10,503	2,392
2008	15,635	12,130	3,505
2009	14,745	10,332	4,413
2010	16,345	9,774	6,571
2011	19,364	8,660	10,704
Total	188,032	137,705	50,327

TABLE 40b

Net Unpaid Loss and DCC Reserves Per Schedule P – Part 1 – Summary (000 omitted)	
Column 24, Total Net Losses and Expenses Unpaid, Line 12, Totals:	51,557
Column 21, Direct and Assumed A&O Unpaid, Line 12, Totals:	2,599
Column 22, Ceded A&O Unpaid, Line 12, Totals:	4
Column 25 – (Column 21 – Column 22), Total Net Losses and DCC Unpaid:	48,962
Difference, Schedule P – Part 2 minus Part 3 and Schedule P – Part 1:	**1,365**
Note to Financial Statement on Discounting (in whole dollars)	
Workers' Compensation Cases:	495,000
Workers' Compensation IBNR:	664,000
Other Liability Cases:	21,000
Other Liability IBNR:	15,000
Other Liability – Structured Payments IBNR:	170,000
Total Amount of Tabular Discount per Notes to Financial Statements:	1,365,000
Total Amount of Tabular Discount per Notes to Financial Statements, divided by 1,000:	**1,365**

The amount of tabular discount included in Schedule P, Part 1 should reconcile to the amount disclosed in the Note titled *"Discounting of Liabilities for Unpaid Losses or Unpaid Loss Adjustment Expenses"* (Note 32 of the 2011 Annual Statement).

Actuarial Projections

The format of Parts 2 through 4 is conducive for loss development projection methods used by actuaries to assess a company's reserve adequacy. However, actuaries tend to view the data in a slightly different format than that presented in Parts 2 through 4. Shifting all of the cells to the left so that each accident year starts with figures in column 1 transforms the data into standard triangular format used in the loss development (or "chain ladder") method. The paid loss triangle comes directly from Schedule P, Part 3, and the case incurred loss triangle can be derived by subtracting the IBNR in Part 4 from the incurreds in Part 2. The following provides the calculation of the net case incurred (reported) triangle for Fictitious Insurance Company.

TABLE 41a

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 2 — Summary

Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
Prior	XXX	35,994	38,360	41,784	43,601	44,861	45,378	45,947	45,884	45,845	46,022
2002	14,249	13,109	13,545	13,763	13,842	13,778	13,722	13,657	13,408	13,387	
2003	14,434	13,651	14,040	13,994	14,032	14,042	13,748	13,617	13,540		
2004	15,733	14,265	13,630	13,209	12,726	12,485	12,288	12,099			
2005	15,982	14,733	14,195	13,210	12,768	12,445	12,321				
2006	13,501	13,051	12,370	12,056	11,837	11,679					
2007	13,938	13,629	13,303	13,265	12,895						
2008	15,980	16,106	16,015	15,635							
2009	14,917	14,851	14,745								
2010	15,972	16,345									
2011	19,364										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ending		50,243	65,903	84,713	101,651	114,561	127,581	141,626	154,924	169,543	188,032
	Check:	–	–	–	–	–	–	–	–	–	–

TABLE 41b

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 4 — Summary

Bulk and IBNR Net Losses and Defense and Cost Containment Expenses Reported at Year-End

(000 omitted)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
Prior	XXX	17,126	14,330	13,764	12,807	12,285	11,632	10,529	9,752	8,907	8,088
2002	7,093	3,349	2,393	1,821	1,445	1,249	1,121	1,010	728	677	
2003	7,149	3,583	2,544	1,799	1,479	1,370	1,016	814	713		
2004	8,512	4,667	3,068	2,149	1,505	1,122	864	651			
2005	7,337	4,644	3,505	2,131	1,522	1,030	876				
2006	6,333	4,175	2,757	1,959	1,440	1,114					
2007	6,022	3,756	2,640	2,018	1,459						
2008	6,400	3,932	2,810	1,850							
2009	6,008	3,544	2,511								
2010	5,817	3,682									
2011	6,422										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ending		24,219	24,828	28,252	29,176	29,574	30,211	29,569	28,961	27,972	28,043
	Check:	–	–	–	–	–	–	–	–	–	–

TABLE 41c

Difference between Schedule P — Part 2 — Summary and Part 4 — Summary

Case Incurred (Reported) Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
Prior	XXX	18,868	24,030	28,020	30,794	32,576	33,746	35,418	36,132	36,938	37,934
2002	7,156	9,760	11,152	11,942	12,397	12,529	12,601	12,647	12,680	12,710	
2003	7,285	10,068	11,496	12,195	12,553	12,672	12,732	12,803	12,827		
2004	7,221	9,598	10,562	11,060	11,221	11,363	11,424	11,448			
2005	8,645	10,089	10,690	11,079	11,246	11,415	11,445				
2006	7,168	8,876	9,613	10,097	10,397	10,565					
2007	7,916	9,873	10,663	11,247	11,436						
2008	9,580	12,174	13,205	13,785							
2009	8,909	11,307	12,234								
2010	10,155	12,663									
2011	12,942										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ending		26,024	41,075	56,461	72,475	84,987	97,370	112,057	125,963	141,571	159,989
	Check:	–	–	–	–	–	–	–	–	–	–

The "ending" rows simply provide the sum of each of the diagonals of data, thereby showing the ending balances as of December 31 of the respective years.

The following provides the net paid loss and DCC triangle for Fictitious in the same triangular format as shown above for reported loss and DCC.

TABLE 42

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary

Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
Prior	XXX	000	9,061	13,830	18,110	21,281	23,728	26,341	27,752	29,108	30,210
2002	3,881	6,637	8,297	9,620	10,627	11,289	11,686	11,961	12,108	12,202	
2003	4,121	7,109	9,011	10,142	11,035	11,552	11,847	12,070	12,238		
2004	4,061	6,981	8,385	9,439	10,067	10,485	10,772	10,933			
2005	4,376	7,649	8,904	9,766	10,329	10,724	10,919				
2006	4,208	6,630	7,898	8,803	9,481	9,804					
2007	4,591	7,325	8,821	9,846	10,503						
2008	6,026	9,265	10,971	12,130							
2009	5,626	8,740	10,332								
2010	6,278	9,774									
2011	8,660										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ending		3,881	19,819	33,297	48,098	62,292	75,616	90,661	104,889	120,098	137,705
	Check:	–	–	–	–	–	–	–	–	–	–

Cautions When Using Schedule P to Assess Reserve Adequacy

Age-to-age loss development factors can be computed from the above triangles and projections of ultimate loss and DCC made. However, we note several issues that we have observed in practice with blindly using Schedule P data to assess the adequacy of an insurance company's reserves:

- While there are Instructions to the Annual Statement and third-party companies provide software to assist in insurers in preparing their Schedule P, certain allocations and presentations are left up to interpretation of the person completing Schedule P.
- Internal pooling or reinsurance agreements may have an impact on the data set, and that impact may not be readily apparent from Schedule P. For example, we have seen pooling and reinsurance arrangements on a calendar year basis, as opposed to accident or policy year, which distorts Schedule P since it is on a net (or after pool) basis.

- Schedule P contains experience from a company's participation in voluntary and involuntary pools and/or associations. Many underwriting pools report IBNR reserves as case reserves, thereby distorting analytics and projections that use case base reserves. Further, a company's level of participation in the pool may have changed over time.
- Schedule P only contains data for the last 10 accident years. Most casualty lines have experienced loss development significantly longer than 10 years. Tail development factors have to be estimated using other (external) sources, thereby increasing the uncertainty of the projections.
- Commutations of reinsurance agreements can also distort an analysis of loss development using Schedule P. Commutations represent an agreement between a reinsurer and the reinsured to release all obligations under a reinsurance contract. Typically, the reinsurer will pay a lump sum to the reinsured to extinguish all future liabilities. The reinsurer's case and IBNR reserves for the assumed contract will drop to $0 upon paying the lump sum, while the ceding company's net reserves should increase since the ceding company can no longer take credit for the reinsurance and "reassumes" the liability.
- The data triangles in Parts 2 through 4 include DCC expenses, potentially masking trends in the loss or DCC components that may impact reserve needs.
- Analytics of the data, including a review of loss ratios, claim closure rates from Part 5 data, and average severities from data contained in Parts 2 through 5 can provide observations regarding trends. However, the underlying cause for these trends, and determination of their impact on future claim payments, can only be obtained through discussion with company management, including interviews with management in the pricing, underwriting and claims departments of the insurance company. Care should be taken in the interpretation of these trends absent these discussions.

This list is not intended to be all-inclusive, but rather illustrate that care should be taken when drawing conclusions about a company's recorded reserves using Schedule P data alone.

As with any unpaid claim analysis, consideration should be made for changes in the company's business, including but not limited to retentions, claims settlement and reserving, business mix, and underlying exposures. One of the Schedule P Interrogatories helps to address this. Interrogatory 7 asks for further explanation regarding *"any especially significant events, coverage, retention or accounting changes that have occurred that must be considered"* in using Schedule P data to assess reserve adequacy.

Hindsight Tests from Part 2

Part 2 represents ultimate incurred loss and DCC by accident year, recorded by the company at the end of each of the last 10 years. Part 2 is particularly useful as it shows how the company's estimates of ultimate loss and DCC have fared over the past year and past two years, as displayed in columns 11 and 12, respectively. The figures in column 11 provide the change in ultimates over the past year (column 10 minus column 9) for all accident years prior to the current accident year. Column 12 provides the change in ultimates over the past two years (column 10 minus column 8) for all but the most recent two accident years.

The totals of the figures in columns 11 and 12 of Part 2 – Summary reconcile directly to the current calendar year figures in column 1, lines 73 and 75 respectively, of the Five-Year Historical Data exhibit within the Annual Statement. This is illustrated below for Fictitious Insurance Company using the 2011 Annual Statement:

TABLE 43a

Data from 2011 Annual Statement for Fictitious Insurance Company
Schedule P — Part 2 — Summary (000 omitted)
Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-end

Years in Which Losses Were Incurred	Development	
	One Year	Two Year
Prior	177	138
2002	(21)	(270)
2003	(77)	(208)
2004	(189)	(386)
2005	(124)	(447)
2006	(158)	(377)
2007	(370)	(408)
2008	(380)	(471)
2009	(106)	(172)
2010	73	XXX
2011	XXX	XXX
Total	(875)	(2,601)

TABLE 43b

Five-Year Historical Data (000 omitted)	
	2011
73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2 — Summary, Line 12, Col. 11)	(875)
75. Development in estimated losses and loss expenses incurred 2 years before the current year and prior year (Schedule P, Part 2—- Summary, Line 12, Col. 12)	(2,602)

While the absolute dollar amount of development is useful, it is valuable to view loss development in relation to prior year reserves from which the development has emerged, as well as on prior year surplus. For Fictitious, the $0.875 million of favorable development represents less than 1.8% of prior year reserves totaling $49.445 million.[85] This means that, with perfect hindsight, company management would have established reserves at $48.570 million ($49.445 million minus $0.875 million).

In *Part IV. Statutory Filings to Accompany the Annual Statement* of this publication, we discuss loss development as a ratio to surplus in further detail. This is a measure used by the NAIC Insurance Regulatory Information System (IRIS). For now, we will simply state that the $0.875 million of favorable development represents less than 2.8% of policyholders' surplus as of December 31, 2010, totaling $31.608 million per column 2, line 37 of page 3 of the company's 2011 Annual Statement.

A benefit of Part 2 is that it provides further insight into the observed development. The development across all accident years may be negligible in aggregate; however, there may be large increases or decreases in certain accident years or lines of business that warrant further investigation.

As displayed above, Fictitious Insurance Company experienced favorable development in 2011, totaling $0.875 million on prior accident years. We see that the favorable development on accident years 2002 through 2009 was somewhat offset by adverse development on the prior accident years and the current accident year. This is where the actuary becomes a detective to uncover the cause of the development.

- First, when we see adverse development in the prior accident years, we might first look to the longer-tailed casualty lines as the culprit. Schedule P, Parts 2A through 2T

[85] The net loss and DCC reserve of $49.4 million as of December 31, 2010, was computed by subtracting column 9 in Schedule P, Part 2 — Summary from column 9 in Schedule P, Part 3 — Summary (i.e., ultimate incurred minus paid = unpaid). This was done to put the reserve amount on the same basis as the development amount, both of which are undiscounted.

provide net incurred loss and DCC development for each of the Schedule P lines of business.

- Second, when we see adverse development on the "all prior" years, and then a consistent trend of favorable development, we question the difference between the exposures in the prior accident years versus those in the subsequent accident years. Generally speaking, if the exposures underlying the prior years were consistent with those in subsequent accident years, we would expect the adverse development to flow through to the current years as well.

Once we identify the line of business, we could look to other areas of the Annual Statement for guidance. For example, we can turn to the Notes to the Financial Statements, in particular "Changes in Incurred Losses and Loss Adjustment Expenses" (Note 25 of the 2011 Annual Statement) for further details. This Note provides management's explanation for development during the year. This may lead to review of additional notes, such as the note titled "Asbestos/Environmental Reserves." Oftentimes when we see adverse development isolated to the prior years row, we look to see if it stems from asbestos and environmental (A&E) claims activity.[86]

While the line of business details in Parts 2A through 2T and Notes to the Financials provide further insight into the source of loss development, they do not substitute the value of a conversation with management of the insurance company. Management can provide further color around the causes of development that pure numbers and notes cannot.

Prior Years Row

The calculation of the prior years row in Schedule P, Parts 2 through 4 can be a bit cumbersome and confusing. The easiest way to explain the calculation is to start backwards, providing the source of the prior years row for Schedule P, Part 4, and then work our way to the details underlying the computation of Part 3, and then Part 2.

Prior Years Row – Part 4

The prior row in Part 4 is the most straightforward. It is simply the amount recorded by the company for bulk and IBNR reserves for all accident years prior to the most recent 10. This amount is determined by the company's management and recorded in Part 4, as are the amounts for all subsequent accident years.

One can reconcile the prior year balances at each evaluation date (i.e., across the columns) to Schedule P, Part 1 of the current and prior year Annual Statements. Specifically, the amount in column 15 (direct and assumed bulk + IBNR loss) minus 16 (ceded bulk + IBNR loss) plus 19

[86] There is considerable uncertainty around the reserving for these types of claims due to the length of time between exposure to manifestation of disease that gives rise to a claim. As such, the industry has experienced considerable adverse development on reserves established for these claims over the years.

(direct and assumed bulk + IBNR DCC) minus 20 (ceded bulk + IBNR DCC) of Schedule P, Part 1, should equal the last number in column 10 of the prior row in Part 4 after adjusting for any tabular discount. The following provides the calculation for Fictitious for 2011.

TABLE 44a[87]

Prior years row	Sch P Part 1 Column	Amount $000s
Direct plus assumed bulk + IBNR loss	15	7,719
minus Ceded bulk + IBNR loss	16	1,416
plus direct plus assumed bulk + IBNR DCC	19	1,545
minus Ceded bulk + IBNR DCC	20	138
Net bulk + IBNR loss & DCC (net of tabular discount)		7,710
plus tabular discount		378
Net bulk + IBNR per Schedule P, Part 4	2011	8,088

The entire prior years row for Part 4 is provided below.

TABLE 44b

Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End (000 omitted)										
Years in Which Losses Were Incurred	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	17,126	14,330	13,764	12,807	12,285	11,632	10,529	9,752	8,907	8,088

Prior Years Row – Part 3

As discussed previously, Part 3 provides cumulative paid loss and DCC for the latest 10 accident years, evaluated as of the end of each of those years. The prior row for Part 3 also provides cumulative paid data; however, it does not start with the cumulative payments from the first year that the company wrote business. Rather, it shows the payments that have occurred on loss and DCC reserves as of the earliest evaluation date in the table, for all prior accident years. Only payments made subsequent to the establishment of reserves as of the earliest evaluation date in the table are shown. The 2011 Annual Statement for Fictitious shows the prior row for Part 3 as the following.

[87] The amount of tabular discount shown in the table is derived from the data in Fictitious' Schedule P by taking the bulk and IBNR in the prior years row from Part 4 minus the corresponding amount in Part 1.

TABLE 45

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary

Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	000	9,061	13,830	18,110	21,281	23,728	26,341	27,752	29,108	30,210

The amount of $9.061 in column 2 represents net amounts paid in 2003 on net loss and DCC reserves established by the Company as of December 31, 2002. The amount shown in column 3 of $13,830 represents net amounts paid *since* year-end 2002 on net loss and LAE reserves as of December 31, 2002, for all prior accident years. This continues all the way until 2011, where the amount of $30,210 represents net amounts paid since year-end 2002 (through year-end 2011) on net loss and DCC reserves as of December 31, 2002, for all prior accident years.

Only loss and DCC payments on reserves evaluated as of the earliest evaluation date (December 31, 2002, in our example) are shown in the prior row. As a result, the balance in the first column is always zero.

The calculation of the prior row in Part 3 is done by computing the incremental payments subsequent to the earliest evaluation date (2002 in our example) for both the prior and first subsequent accident year from the previous year's Schedule P, Part 3 (2011 in our example). The following provides this calculation using Part 3 from the 2010 Schedule P for Fictitious.

TABLE 46

Data from 2010 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary

Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2001	2 2002	3 2003	4 2004	5 2005	6 2006	7 2007	8 2008	9 2009	10 2010
Prior	000	8,238	14,960	18,129	21,279	23,817	25,840	28,163	29,380	30,519
2001	4,680	8,297	10,637	12,236	13,367	13,999	14,424	14,714	14,908	15,124

Calculation to Transition 2010 Part 3 Prior Row to 2011 Schedule P, Part 3

Current Column minus 2002 Column (Column 2) in 2010 Part 3

Years in Which Losses Were Incurred	1 2001	2 2002	3 2003	4 2004	5 2005	6 2006	7 2007	8 2008	9 2009	10 2010
Prior		–	6,722	9,891	13,041	15,579	17,602	19,924	21,142	22,281
2001		–	2,340	3,939	5,070	5,702	6,127	6,417	6,611	6,828
Sum		–	9,062	13,830	18,110	21,282	23,729	26,342	27,753	29,108

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 3 — Summary

Cumulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
Prior	000	9,061	13,830	18,110	21,281	23,728	26,341	27,752	29,108	30,210

As displayed above, the starting point for the calculation is the first two rows (prior and 2001) of Part 3 of Fictitious 2010 Annual Statement. To calculate the prior years row for Part 3 of Fictitious' 2011 Annual Statement, the difference between amounts in each column and the amounts in column 2 (2002) is computed. The prior and subsequent accident year (2001) payments are then added together to produce the new prior row for Part 3 of the Company's 2011 Schedule P.

For example, cumulative net paid loss and DCC for column 2 (2003) are calculated as:

$$14{,}960 - 8{,}238 + 10{,}637 - 8{,}297 = 6{,}722 + 2{,}340 = 9{,}061$$ [88]

[88] Minor differences due to rounding.

As another example, the cumulative net paid loss and DCC for column 10 (2010) are calculated as:

30,519 - 8,238 + 15,124 - 8,297 = 22,281 + 6,827 = 29,108[89]

Prior Years Row – Part 2

As discussed previously, Part 2 provides cumulative ultimate incurred loss and DCC for the latest 10 accident years, evaluated as of the end of each of those years. The prior row for Part 3 also provides cumulative incurred data; however, it does not start with the cumulative incurreds from the first year that the company wrote business. Rather, it starts with the net loss and DCC reserves recorded by the Company as of the earliest evaluation date in the table and includes this amount in column 1 of Schedule P, Part 2. For example, using Schedule P, Parts 2 through 4, Summary, of the 2010 and 2011 Annual Statements for Fictitious Insurance Company, we see that column 1 of the prior row in the 2011 Schedule P, Part 2, is equal to the sum of the following amounts in column 2 (labeled "2002") from the 2010 Annual Statement (USD in 000s).

TABLE 47

Data from 2010 Annual Statement	2002	Source
Case outstanding:		*Schedule P, Part 2-Summary minus Part 3 – Summary minus Part 4 – Summary*
Prior Years row	15,123	*Line 1*
2001 row	3,745	*Line 2*
Sum	18,868	
Bulk and IBNR:		*Schedule P, Part 4-Summary*
Prior Years row	13,241	*Line 1*
2001 row	3,886	*Line 2*
Sum	17,127	
Total Unpaid:		
Prior Years row	28,365	*Sum of above (case outstanding plus bulk and IBNR)*
2001 row	7,630	*Sum of above (case outstanding plus bulk and IBNR)*
Sum	**35,995**	*Sum of above (case outstanding plus bulk and IBNR)*
↓		
2011 Annual Statement	**2002**	**Source**
Schedule P – Part 2 – Summary, Prior Years row	**35,994**	*Line 1*

As displayed above, the amount in column 1 of the prior row in 2011 Schedule P, Part 2, Summary is $35,994.

[89] Minor differences due to rounding.

Then, amounts in columns 2 and subsequent are equal to the ending reserves (case plus bulk plus IBNR reserves) as of each corresponding year-end, plus the paids from the corresponding prior row in Schedule P, Part 2. This is shown below for Fictitious:

TABLE 48

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Parts 2 through 4 — Summary

Prior Years Row, Net Loss & DCC

Years in Which Losses Were Incurred	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
Prior Paid from Part 3	000	9,061	13,830	18,110	21,281	23,728	26,341	27,752	29,108	30,210
Prior Case Outstanding from Part 2 — Part 3 — Part 4	XXX	14,969	14,190	12,684	11,295	10,018	9,077	8,380	7,830	7,724
Prior Bulk + IBNR from Part 4	17,126	14,330	13,764	12,807	12,285	11,632	10,529	9,752	8,907	8,088
Total Prior Unpaid (Case + Bulk + IBNR)		29,299	27,954	25,491	23,580	21,650	19,606	18,132	16,737	15,812
Prior Incurred Loss = Paid + Unpaid	35,994	38,360	41,784	43,601	44,861	45,378	45,947	45,884	45,845	46,022

Data from 2011 Annual Statement for Fictitious Insurance Company, Schedule P — Part 2 — Summary

Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
Prior	35,994	38,360	41,784	43,601	44,861	45,378	45,947	45,884	45,845	46,022

As displayed above, the case outstanding plus bulk plus IBNR reserves in the prior rows, derived from Parts 2 through 4, are summed and then added to the corresponding cumulative paids since 2003. This produces the "incurreds" on all prior accident years, as shown in Schedule P, Part 2.

All the examples above are provided for the Summary of Schedule P, Parts 2 through 4, with the calculation being the same for all of the lines of business in Parts 2A through 2T.

Prior Years Row – Fictitious 2010 Annual Statement

For completion, and so that a reconciliation can be made of the amounts shown in Table 48 for 2010, the following provides the prior years and 2001 rows from Schedule P, Parts 2 and 4 from Fictitious' 2010 Annual Statement.

TABLE 49

Data from 2010 Annual Statement for Fictitious Insurance Company, Schedule P — Part 2 — Summary

Incurred Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2001	2 2002	3 2003	4 2004	5 2005	6 2006	7 2007	8 2008	9 2009	10 2010
Prior	31,760	36,602	38,321	41,474	43,475	44,539	45,113	45,607	45,605	45,706
2001	15,976	15,927	16,574	16,844	16,661	16,856	16,799	16,875	16,814	16,673

Data from 2010 Annual Statement for Fictitious Insurance Company, Schedule P — Part 4 — Summary

Bulk and IBNR Net Losses and Defense and Cost Containment Expenses Reported at Year-End (000 omitted)

Years in Which Losses Were Incurred	1 2001	2 2002	3 2003	4 2004	5 2005	6 2006	7 2007	8 2008	9 2009	10 2010
Prior	14,550	13,241	11,605	11,986	11,610	11,089	10,606	9,506	8,852	8,191
2001	7,241	3,885	2,725	1,778	1,197	1,196	1,026	1,023	900	716

As a reminder, Part 3 from Fictitious' 2010 Annual Statement is shown in Table 46.

Claim Counts

Part 3 also provides the number of claims closed with and without loss payment in columns 11 and 12, respectively. These figures are provided only for those lines where this information is provided in Part 5 (see below); these figures are not shown in the Summary.

SCHEDULE P — PART 5

Part 5 is provided in the following three sections, which are provided by accident year as of the last 10 year-end evaluations on a direct plus assumed basis:

Section 1: Cumulative number of claims closed with loss payment
Section 2: Number of claims outstanding
Section 3: Cumulative number of claims reported

Part 5 is provided for the following lines of business:

A - Homeowners/Farmowners
B - Private Passenger Auto Liability/Medical
C - Commercial Auto Liability/Medical
D - Workers' Compensation

E – Commercial Multiple Peril
F – Section A[90] – Medical Professional Liability - Occurrence
F – Section B – Medical Professional Liability – Claims-Made
H – Section A – Other Liability – Occurrence[91]
H – Section B – Other Liability – Claims-Made
R – Section A – Products Liability – Occurrence
R – Section B – Products Liability – Claims-Made
T – Warranty

No summary is provided for Part 5.

As noted, claim counts can assist the user in identifying trends or changes in the way claims are settled and reserved. However, caution should be made in relying solely on the analytics without discussion with company management, ideally management within the claims department of the insurance company. There is inconsistency in the way that companies record and report claim counts, and sole reliance on the data without confirmation with management can be misleading. One known inconsistency is that some companies record claims on a per-claim basis and others on a per-claimant basis. As we shall see later in this chapter, the Interrogatories of Schedule P require that companies disclose the method for recording claim counts.

Actuaries can derive many statistics from the data contained in Part 5. In the following paragraphs we discuss the most common claim count statistics used by actuaries, as well as other uses of Part 5.

Claim Closure Rates

These represent the ratio of closed claims to total reported claims. The ratio can be computed as all closed claims, or only those claims closed with payment, divided by reported claims. This relationship, in particular when viewed in the current accident year in comparison to prior accident years during the first 12 months of a development, helps to identify any changes in the rate at which claims are settled (closed).

We often hear claims adjusters say "the best claim is a closed claim," the reason being that the longer a claim stays open, the greater the likelihood it will develop adversely and cost the insurer more money. A closed claim significantly reduces that potential, in most cases to zero.[92] Closed claims also benefit the insured by allowing the insured to receive medical

[90] The line of business section headings change from 1 and 2 to A and B in Part 5, due to the naming of Sections 1 through 3 herein.
[91] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[92] There is always the chance that a claim could reopen.

treatment, repair damaged property and recover from the loss. Claims departments look for ways to increase claim settlement rates to achieve this mutual benefit.

Despite the benefits of such improvements, they can have an adverse effect on the projection of unpaid claims if not explicitly taken into consideration. Take for example the situation where a company has implemented a new strategy to increase claim settlement rates in the current year. This will result in higher than average claim payments being made in the current year and will cause the paid loss development factors at the latest evaluation date (i.e., last diagonal) to be higher than in prior evaluation dates along the diagonals. Giving weight to this higher factor in the application of loss development factors to paid losses (that are themselves higher than normal) will result in the over-projecting of ultimate losses and therefore the overestimate of unpaids.

Similarly, a claims department may also experience a reduction in claim settlement rates for numerous reasons, such as reductions in staffing levels, growth in a book without a commensurate increase in claim staff, or influx of claims resulting from the occurrence of a catastrophe, among others. A reduction in claim settlement rates could result in underestimating unpaid claims because the last diagonal of loss development factors and current evaluation of paid losses are suppressed relative to prior years.

A review of claim closure rates will help to identify these trends, thereby enabling the actuary to consider the impact on the analysis of unpaid claims.

Table 50 shows the triangle of claim closure rates for Fictitious' homeowners line of business.

TABLE 50

Data from 2011 Annual Statement for Fictitious Insurance Company, Data from Schedule P — Part 5A — Homeowners/Farmowners

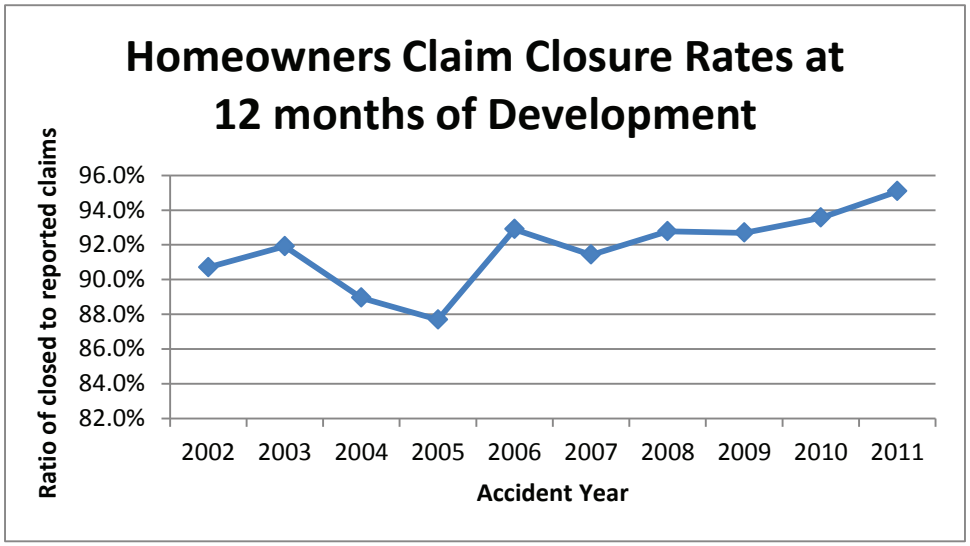
Calculation of Claim Closure Rate (Total Claims Closed from Section 3 minus Section 2, divided by Total Reported Claim Counts from Section 3)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months
2002	90.7%	97.9%	98.8%	98.8%	99.2%	99.6%	99.6%	99.6%	99.6%	99.6%
2003	91.9%	98.4%	99.2%	99.6%	99.6%	99.6%	99.6%	99.6%	99.6%	
2004	88.9%	97.7%	99.1%	99.5%	99.5%	99.5%	99.5%	99.5%		
2005	87.7%	98.1%	98.6%	99.5%	99.5%	99.5%	99.5%			
2006	92.9%	98.6%	99.5%	99.5%	99.5%	99.5%				
2007	91.4%	98.4%	99.0%	99.5%	99.5%					
2008	92.8%	98.7%	99.3%	99.7%						
2009	92.7%	99.0%	99.7%							
2010	93.6%	99.1%								
2011	95.1%									

The above was computed by taking total reported counts in Section 3 of Part 5A and subtracting the open counts in Section 2 to compute a triangle of closed counts. We then took the resulting closed count triangle and divided by the reported count triangle in Section 3.

Depending on the line of business, generally, only the first two to three columns are relevant to the actuary, as claim adjusters tend to have the biggest impact on claim settlement in the first couple of years of development. After that, it is often difficult to have a widespread effect on the open claims. For a short-tailed line of business such as homeowners, actuaries will tend to focus on the first 12 months in the above triangle. The following provides a graphic depiction of the first 12 months of settlement rates.

TABLE 51



From the chart we see a slight uptick in the claim settlement rates since 2009. While the change is relatively benign, it would be important to talk to Fictitious' management to see if there are any internal or external changes than might impact the rate at which homeowners claims are being settled. Additionally, it would be interesting to inquire as to the changes that occurred in 2004 and 2005, as there appears to have been a large drop in the rate at which claims were being closed. We know 2005 was marred by Hurricanes Katrina, Rita and Wilma, and it may be that Fictitious' claims department had some difficulties keeping pace with the large number of claims reported during 2005.

Closed With Pay (CWP) Ratios

These represent the ratio of CWP claims to total closed claims. Companies may experience changes in the rate that claims are closed without payment. It is important for the actuary to understand the implications of changes in CWP rates on the unpaid claim analysis. While a

decreasing trend in CWP rates is generally a good sign, it may result in increases in reopened claims in the future or have other effects that are not easily discernible in the loss data.

Table 52 provides the ratio of claims closed without payment to total closed claims for Fictitious. While we can show the ratio of CWPs as well, which is simply one minus the ratios shown within Table 52, we thought the ratios of closed without pay more clearly highlights some changes in the Company's experience.

TABLE 52

Data from 2011 Annual Statement for Fictitious Insurance Company, Data from Schedule P — Part 5A — Homeowners/Farmowners

Ratio of Claims Closed Without Payment to Total Closed Claims

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
2002	1%	16%	15%	15%	15%	15%	16%	16%	16%	16%	
2003	14%	14%	14%	14%	14%	13%	13%	13%	13%		
2004	16%	16%	16%	16%	16%	16%	16%	16%			
2005	13%	13%	13%	13%	13%	13%	12%				
2006	9%	9%	9%	9%	9%	9%					
2007	8%	9%	8%	8%	8%						
2008	8%	8%	8%	8%							
2009	9%	9%	9%								
2010	8%	8%									
2011	6%										

As displayed above, there appears to have been a drop in claims closed without pay between the 2004 and 2006 accident years from around the 15% level at 12 months of development to about the 8% level for accident years 2006 through 2010 at 12 months. There seems to be a further decline in accident year 2011, although to a much lesser degree. Inquiries would have to be made of company management to understand the cause for these trends and ascertain the impact on future loss and LAE development.

Claim Frequency

The rate of claim frequency can be determined using Schedule P data by dividing claim counts in Part 5 by earned premiums in Part 1. This can be useful in identifying changes in the rate claims are closed and reported relative to the exposure. However, we note that the exposure here is influenced by rate changes. Therefore, similar to loss ratios, these rates can go up or down depending on pricing changes. Schedule P does not provide the raw exposure base (e.g., home years for homeowners, car years for auto, payroll or employee count for workers' compensation). As a result, one cannot identify pure loss cost trends using this data without making manual adjustments for changes in rate.

Average Claim Severities

In addition to providing statistics based solely on counts, the actuary can also analyze severities using the loss data from Parts 2 through 4 and the count data in Part 5. The actuary can analyze the following:

- Average closed claim severities, which are computed as the ratio of net paid loss and DCC to direct plus assumed claims closed with payment (or total closed claim counts). The numerator in the equation comes from Schedule P, Part 3, and the denominator comes from Schedule P, Part 5, Section 1 (or Section 3 minus Section 2 for total closed claim counts).
- Average case outstanding severities, which are computed as the ratio of net case outstanding loss and DCC to direct plus assumed open counts. The numerator in the equation comes from Schedule P, Part 2 minus Part 3 minus Part 4, and the denominator comes from Schedule P, Part 5, Section 2.
- Average reported claim severities, which are computed as the ratio of net reported loss and DCC to direct plus assumed reported counts. The numerator in the equation comes from Schedule P, Part 2 minus Part 4, and the denominator comes from Schedule P, Part 5, Section 3.

The above enables the actuary to identify trends in the cost of insurance claims. Such trends may be inflationary, a result of law changes, attributed to one-time catastrophic claims, due to changes in deductibles or retentions, or caused by internal factors, among others.

As with claim counts, actuaries generally look for changes in the first few years of development, as these changes tend to have the biggest impact on reserve levels.

A review of average case reserves is particularly useful to the reserving actuary. Changes in case reserve levels may be a sign that the company has strengthened or weakened its case reserves. For example, if we were to compute a triangle of average case outstanding severities and observe a decrease along the last diagonal relative to the prior diagonal, then that may be a sign that the company has weakened its case reserves.[93] Of course, this observation would warrant discussion with the company's claims department. However, assuming there was a weakening in case reserves, use of the reported loss development method to project unpaid loss, without adjustment to reflect the weakening, may understate the reserve need.

[93] The last diagonal represents average case outstanding reserves corresponding to the accident years in the left most column, as of the current evaluation date, which is December 31, 2011 for Fictitious. The prior diagonal is one year prior to the current evaluation (i.e., December 31, 2010 for Fictitious).

To be more specific, loss development methods assume that the past is predictive of the future. When a company weakens reserves, the reported losses are at a lower level than they had been at the past. Therefore application of prior average loss development factors to current, lower loss amounts, will tend to understate the ultimate loss estimate and therefore the reserve need. The effect is similar to what happens to development methods using paid loss data when there has been a change in the rate claims are being closed. A decrease in claim settlement rates (i.e., "slowdown") along the last diagonal will result in an understatement of the reserve need absent adjustment to the paid loss triangle or paid loss development methods. And, the opposite can happen when there has been a strengthening in case reserves or a speed-up in claim settlement. While not the topic of this publication, there are loss reserving methods that explicitly adjust for changes in case reserve adequacy and claim closure rates, such as those described in the Berquist-Sherman paper.[94]

Table 53 provides the average case outstanding reserves for Fictitious' homeowners line of business:

TABLE 53

Data from 2011 Annual Statement for Fictitious Insurance Company,
Data from Schedule P — Parts 2 through 5 — Homeowners/Farmowners

Average Net Case Outstanding Loss and DCC Severities
(Net Case Outstanding Loss and DCC / Open Claim Counts)

Years in Which Losses Were Incurred	12 Months	24 Months	36 Months	48 Months	60 Months	72 Months	84 Months	96 Months	108 Months	120 Months	120 Months
2002	7,350	10,800	10,677	6,000	5,000	7,000	5,000	2,000	1,000	–	
2003	9,053	16,750	19,000	21,000	12,000	7,000	5,000	2,000	1,000		
2004	8,636	18,600	23,500	25,000	14,000	9,000	5,000	2,000			
2005	9,360	13,750	8,667	9,000	11,000	12,000	–				
2006	14,571	30,333	45,000	26,000	15,000	8,000					
2007	18,333	37,000	30,500	34,000	18,000						
2008	14,684	32,250	37,500	40,000							
2009	15,789	42,000	61,000								
2010	16,789	41,333									
2011	17,429										
		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Ending			10,966	10,844	11,243	14,833	17,920	17,071	17,774	19,194	18,909
Annual Trend				-1%	4%	32%	21%	-5%	4%	8%	-1%

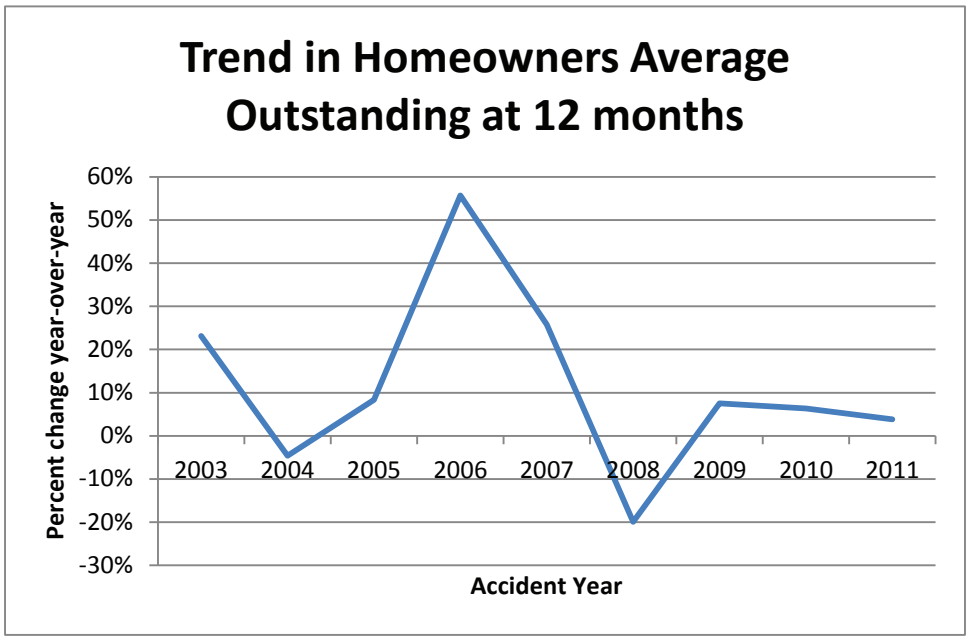
The bottom row shows the trend across all accident years combined, over each evaluation year. We see that in 2009 and 2010, average reserve levels increased by about 4% and 8%,

[94] Berquist, J.R.; and Sherman, R.E., "Loss Reserve Adequacy Testing: A Comprehensive, Systematic Approach," Proceedings of the Casualty Actuarial Society (PCAS) LXIV, 1977, pp.123-184.

respectively. However, in 2011, reserve levels decreased by 1%. As a result of this decline, the actuary may see ultimate loss and DCC estimates based on reported methods coming in lower than the ultimate loss and DCC estimates based on paid methods.

Looking down the column at the first 12 months, we see a significant increase in case reserve between 2005 and 2006. This is a bit more obvious graphically. The following provides the change in average case reserves, from one accident year to the next, going down the 12 month development column.

TABLE 54



A large spike is seen in 2006. The approximate 56% increase was computed by taking the average case outstanding severity for accident year 2006 of $14,571 and dividing by the average for accident year 2005 of $9,360 to obtain the year-over-year change of 1.56 (+56%).

Despite the large increase in 2006 and subsequent sharp decline in 2008, the year-over-year trend rates in the first 12 months of development appear to have been on a slight decline from 8% to 4% between 2009 and 2011.

As previously mentioned, the value of these analytics is to identify trends and generate discussion with management so that the actuary can appropriately consider them in the analysis of unpaid claims.

Reasonableness Tests

In addition to the raw trends, actuaries also use Part 5 data to provide checks on the reasonableness of unpaid claim estimates. For example, actuaries can compute the following statistics and compare the results to see if the trends across the accident years are in alignment with what they expect:

- Average claim frequency — the ratio of the ultimate claim count estimate by accident year to the corresponding earned premium
- Average ultimate severity — the ratio of the ultimate loss and DCC estimate by accident year to the corresponding estimate of ultimate claim counts
- Average unpaid claim severity — the ratio of the unpaid loss and DCC estimate by accident year to the corresponding estimate of unpaid claims

The above can be computed using direct plus assumed loss and DCC estimates in addition to the net estimates.

Uses of Part 5 in Estimating Unpaid Claims

Before turning to Part 6, we should add that actuaries also use Part 5 for purposes of projecting ultimate loss and DCC estimates. These methods are referred to as "counts and averages" methods. Projections are made by developing average paid and reported loss severities to ultimate and applying them to estimates of ultimate claim counts using closed and reported claims count development methods. These methods can be valuable when adjusting for observed trends in each of their specific components.

SCHEDULE P — PART 6

Part 6 provides cumulative premiums earned as of December 31 for each of the last 10 calendar years. The first year of report includes premiums earned in the calendar year. Moving left to right, subsequent years show premiums earned after positive or negative adjustments from premium audits, retrospectively rated policies, lags in reporting or accounting for premiums, among others. Part 6 provides the information needed to develop earned premium to its ultimate amount using methods similar to those used to develop ultimate loss and DCC (i.e., using traditional, triangular development methods). Part 6 is provided for the following lines of business, as these lines tend to be the ones subject to the aforementioned adjustments:

C – Commercial Auto Liability/Medical
D – Workers' Compensation
E – Commercial Multiple Peril

H – Section A – Other Liability – Occurrence[95]
H – Section B – Other Liability – Claims-Made
M - International
N – Reinsurance – Nonproportional Assumed Property[96]
O – Reinsurance – Nonproportional Assumed Liability[97]
P – Reinsurance – Nonproportional Assumed Financial Lines[98]
R – Section A – Products Liability – Occurrence
R – Section B – Products Liability – Claims-Made

The premium displayed in Part 1 of Schedule P is that which is earned at the end of each specified year and is not updated for subsequent adjustments. It is equal to the left-most diagonal in Part 6. Adjustments made after the first year of report come through in the remaining columns of Part 6.

Workers' compensation provides a good example of a line that is subject to premium adjustment. At inception, the premium charged for a workers' compensation policy is determined by applying a rate to an estimate of the payroll (exposure) for the policy term. At the end of the year, or shortly thereafter, the actual payroll is known. The insurance carrier, however, has determined its premium earnings on the basis of the estimated premium. As a result, the premium figure will change from its initial amount, and this change is recorded in Part 6.

Additionally, the exposure base used to determine the premium can be subject to audit by the insurance carrier. For example, an insurance company can verify that payroll amounts used in determining an insured's workers compensation premium, or revenue figures used in computing an insured's general liability premium, are accurate and complete. Differences uncovered through these audits will emerge as premium development in Part 6.

The one area where we tend to see the most development on earned premium is retrospectively rated insurance policies. Under these policies, the insured is charged a base premium that is adjusted over time based on the insured's loss experience based on a formula. The formula incorporates tax multipliers and expense factors and typically imposes a minimum and maximum premium amount.

[95] Business reported as an aggregate write-in for other lines of business in the State Page is included here (either as occurrence or claims-made, depending on the coverage written).
[96] Property includes fire, allied, ocean marine, inland marine, earthquake, group, credit and other A&H, auto physical damage, boiler and machinery, burglary and theft and international property.
[97] Liability includes farmowners, homeowners and commercial multiperil; medical professional liability workers' compensation; other liability; products liability; auto liability; aircraft (all peril); and international liability.
[98] Financial includes financial guaranty, fidelity, surety, credit and international financial.

Insurance companies record the claim experience associated with retrospectively rated insurance policies within Schedule P, and the loss reserve estimates typically include a provision for these claims. Without adjustment for the additional premium income expected under these policies, a company's surplus would be understated. This adjustment comes in as an asset on line 15.3 of page 2 of the Annual Statement titled "Accrued Retrospective premium."

Estimates of future premium can be determined by developing the earned premiums in Part 6 using development methods. However, as with reliance on the rest of Schedule P for projection purposes, exclusive reliance on Part 6 should not be made without having a good understanding of its contents.

SCHEDULE P — PART 7

Part 7 is optional and completed only by those companies using the loss sensitive adjustment in the RBC calculation. It provides premium and loss information on loss sensitive contracts. It is broken into two parts: A for Primary Contracts (i.e., direct written business) and B for Reinsurance Contracts (i.e., assumed business). Parts A and B each have the same five sections:

- Section 1 provides net loss and LAE unpaid and net written premium on loss sensitive contracts, relative to all contracts written by the company, for each Schedule P line of business in total.
- Section 2 provides incurred loss and DCC reported at year-end on loss sensitive contracts in the same format as Schedule P, Part 2.
- Section 3 provides loss and DCC IBNR at year-end on loss sensitive contracts in the same format as Schedule P, Part 4.
- Section 4 provides net earned premiums reported at year-end on loss sensitive contracts in the same format as Schedule P, Part 6.
- Section 5 provides net reserves for premium adjustments and accrued retrospective premiums at for each of the last 10 years in which the policies were issued, evaluated at each of the last 10 years.

The information provided in Part 7 is on a policy year basis.

As noted, the primary use of this exhibit is for RBC purposes. The Reserve RBC and Written Premium RBC are adjusted to reflect the fact that loss experience under loss sensitive contracts is shared in whole or in part with the insured. As such, the risk of adverse loss development is also shared with the insured. The insurance company receives a discount to its RBC reserve charge to reflect this reduction in risk. This discount is computed separately by line of business. Columns 3 and 6 of Schedules A and B provide the percentage of loss and LAE reserves and written premiums by line of business for loss sensitive contracts. Column 3

provides the distribution of reserves, and column 6 provides the distribution of net written premium.

Examples of how this information is used in computing RBC are contained in *Part IV. Statutory Filings to Accompany the Annual Statement* of this publication.

SCHEDULE P INTERROGATORIES

The Schedule P Interrogatories are a series of seven questions that the insurance company is required to answer to provide further insight into the information reported in Schedule P. We will briefly discuss those interrogatories that are most widely referred to by property/casualty actuaries.

Question 1 pertains to extended reporting endorsements (EREs) arising from death, disability or retirement (DDR). EREs essentially turn a medical professional liability claims-made policy into an occurrence policy upon the policyholder's death, disability or retirement. In the 1990s, DDR endorsements were issued for free and known as "free tail coverage" as a marketing effort by medical insurers to attract physicians. Many such DDR extended reporting period endorsements are still offered for free.

Question 1 has six parts, the first of which pertains to whether the company issues such endorsements for free or at a reduced rate. The remaining five parts serve to identify where and how the company reports the DDR reserve: as unearned premium or loss reserve, claims-made or occurrence, etc. The main point is to make sure these policies have been reserved for somewhere in the company's financial statements, either as losses or unearned premium.

Question 2 asks whether LAE are reported as DCC and A&O as per the definitional change effective January 1, 1998. This is relevant to the actuary or other user who may be relying on Schedule P data to perform reserve adequacy tests.

Question 4 requires disclosure on whether the company's recorded loss and LAE reserves are net of non-tabular discount and reminds the preparer of the Annual Statement that:

- Disclosure of non-tabular discount must be included in the Notes to Financial Statements.
- Discounting is only allowed if the company has permission from its state insurance regulator.
- Schedule P must be prepared gross of non-tabular discounts, with the amount of discount reported in Schedule P – Part 1, Columns 32 and 33.
- Support for the amount of discount must be available for regulatory review upon request.

In question 6, the company is required to indicate whether the company reports claim counts on a per-claim or per-claimant basis in Schedule P. This, along with whether the reporting

convention has changed over time, is relevant in interpreting trends in claim frequency and severity. It is also relevant when assessing reserve adequacy using counts and averages (frequency and severity) methods.

Question 7 is the most important and aligns most directly with the use of Schedule P. It asks if there are any changes or if there is anything special that the user should be aware of if the user decides to rely on the data provided in Schedule P to assess the adequacy of the recorded loss and LAE reserves. If the answer is yes, disclosure of such is required.

INTERCOMPANY POOLING AND SCHEDULE P

It is important to know that intercompany pooling differs from intercompany reinsurance. Intercompany reinsurance is accounted for in the same way as third-party reinsurance, subject of course to statutory accounting rules. Very broadly, cessions to affiliated reinsurers under straight reinsurance agreements serve to reduce gross premiums and losses.

Under intercompany pooling, the treatment is different in Schedule P; gross losses are combined or "pooled" and then shared based on the pooling percentage of each company within the group of affiliates that participates in the intercompany arrangement. Net losses are treated in the same manner in that they are first pooled and then shared based on each company's pooling percentage. Very simply, assume Companies A, B and C participate in intercompany reinsurance, with 60%, 20% and 20% participation, respectively. If each company has $100 of loss reserves on a direct basis and cedes $30 to outside reinsurers, the recorded reserves in Schedule P of Companies A, B and C would be $180, $60 and $60 on a gross of reinsurance basis and $126, $42 and $42 on a net of reinsurance basis, respectively. That is, the pooled gross ($300) and net amounts ($210) are shared based on each company's participation rates. This is summarized in Table 55.

TABLE 55

Reporting in Schedule P				
	Company A (Lead)	Company B (Non-Lead)	Company C (Non-Lead)	Total
Total Gross	180	60	60	300
Total Net	126	42	42	210

While Schedule P for companies that operate under an intercompany pooling arrangement is prepared on a pooled basis, as exemplified above, other schedules and exhibits within the Annual Statement treat intercompany pooling as if it is a typical reinsurance arrangement. Therefore, using the above example, if Company A were the lead in the intercompany pool, then Company A would have $100 in direct loss reserves, plus $70 assumed from each of

Companies B and C, for a total of $240 in gross reserves. The $70 in assumed loss reserves from each non-lead company is after cessions to outside reinsurance.

For each non-lead company, the amount of gross loss reserves is $100 in direct reserves plus the amount assumed after the lead company cedes through the intercompany reinsurance relationship. The amount of business in the intercompany pool is $300 of direct loss reserves minus $90 (=$30*3) of ceded business, for a total of $210 net reserves. The $210 pooled net loss reserve is shared 60%, 20%, 20%, so each non-lead gets $42. Thus, the total gross loss reserves for each non-lead is $100 in direct plus $42 of intercompany pooled loss reserves for a total of $142. These amounts are summarized in Table 56.

TABLE 56

Reporting in Annual Statement Exhibits and Schedules other than P				
	Company A (Lead)	Company B (Non-Lead)	Company C (Non-Lead)	Total
Total Gross	240	142	142	524
Total Net	126	42	42	210

Notice that on a net basis, the amounts are the same in all of the exhibits and schedules within the Annual Statement. However, on a gross basis, exhibits and schedules other than Schedule P essentially double count the cessions to intercompany pooling, whereas Schedule P nets them out.

The fact that Schedule F does not show IBNR on an assumed basis, the double counting effect of pooling, as well as the fact that some companies have other intercompany reinsurance relationships outside the intercompany pooling relationship, complicates the reconciliation between Schedules within the Annual Statement to Schedule P. This is the main reason we have not used Fictitious in our examples.

We used loss reserves in our example. However, it is important to note that pooling percentages apply to the premium, loss, expense and claim count data within Schedule P. Therefore, all figures provided in Part 1 and the triangles provided in Parts 2 through 7 are provided after intercompany pooling. If one wanted to determine total premium, loss, expense and/or claim count data for the pool in aggregate, all one would need to do is divide the figures in Schedule P for a pool member by its intercompany pooling percentage in Schedule P, Part 1, column 34.

Intercompany pooling percentages can change over time, based on a particular group's strategy. The Schedule P for a particular company is generally restated retroactively when there is a change in intercompany pooling.

PART IV. STATUTORY FILINGS TO ACCOMPANY THE ANNUAL STATEMENT

INTRODUCTION TO PART IV

Insurance companies are required to file numerous documents with state insurance regulators each year, either included within or supplemental to the Property/Casualty Annual Statement. These annual filings include those listed in the Official NAIC *Annual Statement Instructions Property/Casualty*,[99] such as the Statement of Actuarial Opinion SAO, Actuarial Opinion Summary Supplement (AOS), Supplemental Compensation Exhibit, Insurance Expense Exhibit (IEE), Supplemental Investment Risks Interrogatories, Financial Guaranty Insurance Exhibit and others such as the National Association of Insurance Commissioners (NAIC) Insurance Regulatory Information System (IRIS) ratio and Risk-Based Capital (RBC) ratio results. Many of these filings serve as a means for regulators to obtain a relatively quick view of an insurance company's financial health, thereby enabling regulators to prioritize those insurance companies requiring immediate attention.

This section addresses the filings that tend to be used the most by property/casualty actuaries, namely:

- SAO
- AOS
- IEE
- RBC
- IRIS

We will discuss the purpose and important aspects of each filing. Many of these filings are addressed in considerable detail in other publications, and the NAIC has issued instructions, manuals and/or software applications that provide the preparer of these filings with authoritative guidance. This section is not intended to replace those readings or provide instructions on how to prepare those filings. Rather, we will limit our discussion to the purpose of each and a general overview of how they are prepared.

[99] *2011 NAIC Annual Statement Instructions Property/Casualty,* pages i-v.

CHAPTER 16. STATEMENT OF ACTUARIAL OPINION

OVERVIEW

The Statement of Actuarial Opinion (SAO) provides the opinion of a qualified actuary on the reasonableness of the loss and loss adjustment expense (LAE) reserves recorded by a property/casualty insurance company as of December 31 each year. It is filed with the Annual Statement, either included or attached to page 1 of the Annual Statement. The SAO must be prepared by a qualified actuary, as defined by the National Association of Insurance Commissioners (NAIC),[100] who is appointed by the company's board and then referred to as the appointed actuary.[101]

Certain companies may qualify for an exemption from the SAO requirement. Possible exemptions include the following:

- Size of the insurer (less than $1 million of total gross written premiums during a calendar year and less than $1 million of total gross loss and LAE reserves at year-end)
- Insurers under supervision or conservatorship
- Nature of business written
- Insurers under financial hardship (if the cost of the SAO is greater than either 1% of surplus or 3% of gross written premiums during the calendar year within which the exemption is requested)

Simply meeting one of the above criteria does not provide automatic exemption. To qualify, the insurer has to file for exemption with its domiciliary commissioner. It is at the discretion of the domiciliary commissioner to decide whether to exempt a company from the SAO requirement.

The main purposes of the SAO are the following:

[100] A qualified actuary is defined by the NAIC as "a person who meets the basic education, experience and continuing education requirements of the Specific Qualification Standard for Statements of Actuarial Opinion, NAIC Property and Casualty Annual Statement, as set forth in the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States,* promulgated by the American Academy of Actuaries, and is either: (i) A member in good standing of the Casualty Actuarial Society, or (ii) A member in good standing of the American Academy of Actuaries who has been approved as qualified for signing casualty loss reserve opinions by the Casualty Practice Council of the American Academy of Actuaries" *2011 NAIC Annual Statement Instructions Property/Casualty*, page 9.

[101] The *2011 NAIC Annual Statement Instructions Property/Casualty* go on further by saying that the requirements of the company's domiciliary state may permit individuals to issue the SAO despite not meeting the definition of qualified actuary per the NAIC. In these instances a letter from the state must be attached to the SAO indicating that the individual meets the state's requirement to issue SAOs. Throughout this text we will use the terms "qualified actuary" and "appointed actuary" to encompass these individuals.

- Provide the appointed actuary's opinion on the reserves specified within the scope of the SAO.
- Inform the reader, in particular regulators, of significant risk factors and/or uncertainties with respect to those reserves.
- Advise whether those risks and uncertainties are reasonably expected to lead to material adverse deviation in the reserves.

There is considerable guidance for the actuary in issuing the SAO. Every appointed actuary should read and be familiar with the most current versions of the following:

- Qualification Standards, as set forth by the American Academy of Actuaries (AAA)
- NAIC Instructions for the SAO
- AAA Committee on Property and Liability Financial Reporting (COPLFR) *Practice Note on Statements of Actuarial Opinion on Property and Casualty Loss Reserves* (COPLFR P/C Practice Note)
- NAIC *Regulatory Guidance On Property and Casualty Statutory Statements of Actuarial Opinion* Prepared by the NAIC's Casualty Actuarial and Statistical (C) Task Force[102]
- Actuarial Standards of Practice (ASOP), including but not limited to:
  - ASOP No. 20. *Discounting of Property/Casualty Unpaid Claim Estimates* (September 2011)
  - ASOP No. 23. *Data Quality*
  - ASOP No. 36. *Statement of Actuarial Opinion Regarding Property/Casualty Loss and LAE Reserves*
  - ASOP No. 41. *Actuarial Communications*
  - ASOP No. 43. *Property/Casualty Unpaid Claim Estimates*
- Applicable state laws, in particular with respect to reserve requirements, SAO requirements, discounting, etc. (the Property/Casualty Loss Reserve Law Manual published annually by the AAA provides a compilation of this material) [103]
- SSAP No. 62 *Property and Casualty Reinsurance*
- SSAP No. 65 *Property and Casualty Contracts*

The SAO is organized into four required sections:

1. Identification
2. Scope
3. Opinion
4. Relevant comments

Each section must be included and clearly identified within the SAO.

[102] This is updated annually and typically included as an appendix to COPLFR P/C Practice Note.
[103] Applicable laws and regulations supersede any applicable ASOPs.

The SAO also contains two exhibits, A and B. Exhibit A provides the recorded amounts associated with the items identified in the scope section, generally on a direct plus assumed and net basis. Exhibit B provides relevant disclosure items with respect to the *net* reserves identified in the scope section, as identified in the relevant comments section. For example, loss and LAE reserves for asbestos are disclosed in Exhibit B on a net of reinsurance basis. There is no separate exhibit within the SAO showing asbestos reserves on a gross of reinsurance basis. Differences between the net and gross (direct plus assumed) amounts reported in Exhibit B may be discussed in the relevant comments section.

While there are other publications on the CAS Exam 6 U.S. Syllabus of Basic Education that cover the SAO, there is not a "real" SAO on the Syllabus to bring the instructions to life for the student. As a result, we have created a SAO for Fictitious Insurance Company to illustrate the application of the SAO instructions in practice. Fictitious' SAO was issued by an imaginary actuary named Mr. William H. Smith, who is a consulting actuary with the make-believe firm, WS Actuarial Consulting. Smith's opinion is included in of this publication and should be read side-by-side with this chapter.

The Fictitious SAO is the author's interpretation of the NAIC instructions as they might apply to Fictitious. It should not be taken as authoritative guidance on format or content of the SAO.

The following provides a summarized view of each of the four sections of the SAO and how Fictitious' appointed actuary responded to each required section in his 2011 SAO for the company.

IDENTIFICATION

The identification section of the SAO provides the actuary's name and credentials, the actuary's qualifications for issuing the SAO, the actuary's relationship to the company, and the date the actuary was appointed by the company's board of directors (or its equivalent) to issue the opinion. This section typically includes a statement identifying the intended purposes and users of the opinion, consistent with ASOP 36 requirements.

For Fictitious, the 2011 SAO was issued by Mr. William H. Smith, who is a Fellow of the Casualty Actuarial Society and Member, American Academy of Actuaries, and is associated with the firm of WS Actuarial Consulting. He was appointed by the company's board of directors on September 7, 2011. At the time of issuance of his opinion (February 24, 2012), Smith met the qualification standards to issue SAOs.

The intended purpose of Smith's opinion was to satisfy the requirements of the NAIC. The intended users were the company's management, the directors of its board and state regulatory officials.

SCOPE

The scope section identifies the reserve items upon which the actuary is giving an opinion as well as the accounting basis for those reserves. The reserve items include:

- Loss and LAE reserves
- Retroactive reinsurance assumed reserves
- Unearned premium reserves for long-duration contracts
- Unearned premium reserves for extended reporting endorsements, such as those included in Schedule P Interrogatory No. 1 of the company's Annual Statement
- Other reserve items for which the actuary is providing an opinion

The scope also identifies the "review date," which is defined in ASOP 36 as "the date (subsequent to the valuation date) through which material information known to the actuary is included in forming the reserve opinion."[104] If no such date is explicitly disclosed, it is likely to be assumed by the reader of the opinion that the review date is the date the opinion is signed.

It also contains a statement regarding who provided the data relied upon by the actuary in forming the opinion and that either the actuary performed a reconciliation of that data, or reviewed a reconciliation prepared by the company, to Schedule P of the company's Annual Statement.

If the company participates in intercompany pooling, the actuary *may wish* to disclose this and the basis for reconciling data used in the actuary's analysis to Schedule P.

Further, regulatory guidance suggests that the scope section for each pooled company provide information about the pooling arrangement, including the intercompany pooling percentage for the company.

There are special requirements for opinions on non-lead companies operating under an intercompany pooling arrangement in which the lead company retains 100% of the pooled reserves. We refer the reader to the NAIC opinion instructions and COPLFR Practice Note for further guidance.

The reserve items on which Smith opined for Fictitious are presented in Exhibit A of his 2011 SAO. As displayed on Exhibit A, Smith opined on net loss and LAE reserves in lines 1 and 2, totaling $51,557,000 as of December 31, 2011. The amounts in lines 1 and 2 of Exhibit A reconcile to lines 1 and 3, respectively, of the Liabilities, Surplus and Other Funds page of the 2011 Annual Statements.

[104] Actuarial Standards Board of the American Academy of Actuaries, "Actuarial Standard of Practice No. 36, Statements of Actuarial Opinion Regarding Property/Casualty Loss and Loss Adjustment Expense Reserves," December 2010, page 3.

Smith also opined on total direct plus assumed (or gross) loss and LAE reserves of $61,699,000, as shown in lines 3 and 4. The amounts in lines 3 and 4 reconcile to Schedule P, Part 1, Summary, columns 13 plus 15, and columns 17, 19 and 21, respectively.

As disclosed in the Notes to Financial Statements (see *Chapter 10. Notes to Financial Statements*) and displayed in Exhibit A of the SAO, Fictitious did not have any retroactive reinsurance assumed as of December 31, 2011. Nor were there any other loss reserve items on which Smith expressed an opinion.

Smith disclosed his "review date" as January 28, 2012. This means that information received through January 28, 2012, was relevant to his analysis of unpaid claims and his opinion on the company's loss and LAE reserves. Information after that date, to the time he signed the opinion on February 24, 2012 (see the signature line of the opinion), was not relied on by Smith in forming his opinion.

The scope section also provides a statement from Smith that he reconciled the data that he relied upon for purposes of forming his opinion to Schedule P, Part 1, of Fictitious' 2011 Annual Statement.

OPINION

The opinion section provides exactly what the name says, the actuary's opinion with respect to the reserves identified in the scope section. The actuary has five options in terms of the type of opinion, as outlined in ASOP 36. These are:

1. Reasonable: if the recorded reserve lies within the actuary's range of reasonable unpaid claim estimates
2. Inadequate or deficient: if the recorded reserves are below what the actuary deems to be reasonable
3. Excessive or redundant: if the recorded reserves are above what the actuary deems to be reasonable[105]
4. Qualified: if the actuary is unable to issue an opinion on certain items and those items are believed to be material
5. No opinion: if the actuary is unable to conclude on the reasonableness of the recorded reserves

Note that in accordance with ASOP 36, the actuary should disclose the minimum amount that he or she deems reasonable when issuing an inadequate or deficient opinion.[106] Similarly, the actuary should disclose the maximum amount deemed to be reasonable when issuing an excessive or redundant opinion.

[105] Ibid., page 9.
[106] Ibid., page 10.

The actuary is also required to state whether the recorded reserves identified in the scope section meet the requirements of the insurance laws of the state the company is domiciled in and are computed in accordance with actuarial standards.

Additionally, if use was made of the work of another actuary, such as for pools and associations, for a subsidiary, or for special lines of business, in forming the SAO, the other actuary must be identified by name and affiliation within the opinion section. The appointed actuary cannot simply rely on another actuary's opinion. The appointed actuary needs to perform enough analysis on the other actuary's work to issue an unqualified opinion on the total reserve amounts listed in Exhibit A. A situation where the actuary may make use of another's work is for reserves assumed by the company for its participation in underwriting pools and associations. ASOP No. 36 provides the relevant guidance, and the COPLFR P/C Practice Note provides good examples of how to handle this situation in practice.[107]

The 2011 SAO for Fictitious states the following:

"In my opinion, the amounts carried in Exhibit A on account of the items identified:

- Make a reasonable provision for all unpaid losses and loss adjustment expenses, gross and net as to reinsurance ceded, under the terms of the Company's contracts and agreements
- Are computed in accordance with accepted standards and principles
- Meet the requirements of the insurance laws of Florida"[108]

Note that Smith opined on the loss and LAE reserves in Exhibit A, items 1 through 6. These reserves include "Retroactive Reinsurance Reserve Assumed," which in the case of Fictitious totaled $0.

Unless otherwise disclosed, the Appointed Actuary will generally opine on the loss and LAE reserves including the amount of retroactive reinsurance assumed, despite the fact that the amount of retroactive reinsurance is not accounted for within lines 1 and 3 of page 3 of the Annual Statement under SAP. This treatment is in accordance with the NAIC instructions. Retroactive reinsurance assumed is a liability, and regulators look for assurance that this balance is reasonable.

The reserves for retroactive reinsurance ceded are not separately listed on Exhibit A and are therefore not explicitly opined on by the actuary. The absence of this reserve from Exhibit A is not because regulators don't care about the reasonableness of the balance. Rather, the reserve for retroactive reinsurance ceded is already included as a component of the gross

[107] Committee on Property and Liability Financial Reporting, American Academy of Actuaries, "Property and Casualty Practice Note, Statements of Actuarial Opinion on P&C Loss Reserves as of December 31, 2011," page 50.
[108] See Appendix I of this publication for the Statement of Actuarial Opinion for Fictitious Insurance Company.

loss and LAE reserves, which are opined on by the actuary.[109] An overstatement or understatement of retroactive reinsurance ceded would impact gross and ceded reserves equally and have no impact on the net reserve balance.

RELEVANT COMMENTS

The relevant comments section provides commentary and disclosures relative to the reserves opined on to assist the reader in understanding the context and composition of those reserves. Commentary is required on the following items:

- The actuary's materiality standard for purposes of addressing the risk of material adverse deviation
- Significant risks and uncertainties that could result in material adverse deviation
- The significance of items listed in Exhibit B, including:
    - Anticipated net salvage and subrogation
    - Nontabular discounting
    - Tabular discounting
    - Net reserves for the company's share of voluntary and involuntary pools and associations
    - Net reserves for asbestos and environmental liabilities
    - Claims-made extended loss and LAE reserve reported as unearned premium and as loss reserves
- Retroactive or financial reinsurance
- Uncollectible reinsurance
- The results of IRIS ratios 11, 12 and 13 and explanation for exceptional values
- Changes in methods and assumptions from those employed in the most recent prior opinion that are deemed to have a material effect on the recorded reserve or actuary's unpaid claim estimate
- Unearned premium reserves for long duration contracts

With respect to the risk of material adverse deviation, the NAIC Instructions requires the appointed actuary to make an explicit statement as to whether or not he/she believes there are significant risks and/or uncertainties that could result in material adverse deviation.

Smith addresses the above items within the 2011 SAO for Fictitious, as applicable. We will not discuss each item but rather provide further details on some to assist in reading this section of the opinion.

[109] Recall from *Chapter 10. Notes to Financial Statements*, a company's gross reserves are not reduced for retroactive reinsurance ceded. Rather, retroactive reinsurance ceded is recorded separately as a write-in item on the balance sheet.

MATERIALITY STANDARD

There are numerous ways an actuary can establish his or her materiality standards, and examples are provided in the COPLFR Practice Note. Common methods are based on a percentage of reserves, surplus and movements in Risk-Based Capital (RBC) levels, among others. Materiality standards such as 10% of loss and LAE reserves or anywhere from 10% to 20% of surplus are commonly used. However, some actuaries establish materiality standards using a set dollar amount based on the actuary's particular knowledge of the company's operations. As an extreme example, for a company operating with limited surplus and/or under regulatory intervention, a deviation in loss and LAE reserves greater than $0 might be considered material.

Regardless, there is no "one size fits all" in terms of formulaic materiality standards. The standard is based on the actuary's personal opinion as to what he or she considers material in relation to the company's reserves and surplus. As noted in Appendix 7 of the COPLFR Practice Note, "Although certain quantitative measures can be suggested for consideration in certain circumstances, no formulaic approach to a quantitative materiality standard can be developed."[110]

Smith considered a deviation in net loss and LAE reserves of more than:

1. 10% of net loss and LAE reserves, which he calculated as:

   10% of $51.557 million = $5.156 million

2. 20% of policyholders' surplus, which he calculated as:

   20% of $31.024 million = $6.205 million

   Or

3. The reduction in surplus that would result in additional action per the NAIC RBC formula, which he calculated as the difference between the following:

   - The company's total adjusted capital of $31.024 million,[111] which produces an RBC ratio of 559% based on authorized control level (ACL) RBC of $5.552 million per the Five-Year Historical Data exhibit
   - Adjusted capital at the next RBC level of $11.104 million, which is equal to two times ACL

[110] American Academy of Actuaries Committee on Property and Liability Financial Reporting, "Statements of Actuarial Opinion on Property and casualty Loss Reserves 2011," Appendix 7, *"CAS VFIC Note on Materiality and ASOP No. 36: Considerations for the Practicing Actuary,"* page 77.

[111] Differences from above due to immaterial rounding errors that may occur in the Annual Statement.

The difference between $31.024 million and $11.104 million is $19.920 million.

For purposes of establishing his materiality standard, Smith selects the smallest of the three balances, which in this case happens to be 10% of net loss and LAE reserves ($5.156 million).

MAJOR RISK FACTORS

Once materiality is defined, the actuary determines whether there are significant risks or uncertainties that could result in material adverse deviation in the company's loss and LAE reserve. According to the NAIC instructions to the SAO, "If such risk exists, the actuary should include an explanatory paragraph to describe the major factors, combination of factors, or particular conditions underlying the risks and uncertainties that the actuary reasonably believes could result in material adverse deviation."[112] Examples of risk factors are provided in the COPLFR Practice Note.

Note that the actuary is not expected to list all risks that the company is exposed. Rather, only those major risk factors that could result in the reserves developing adversely by an amount that is material relative to the actuary's materiality standard. To illustrate, Smith identifies and provides details about major risk factors that materially affect the variability of the reserves held by Fictitious Insurance Company. The major risk factors identified are mass tort claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events, including wildfires, tornadoes and hurricanes. The uncertainty associated with these types of claims adds to the variability in the company's recorded reserves.

RISK OF MATERIAL ADVERSE DEVIATION

The actuary is required to make a clear statement within the SAO as to whether or not there are significant risks or uncertainties that could result in material adverse deviation. That determination is based on the major risk factors identified by the actuary, the actuary's professional opinion of the variability inherent in the unpaid claim estimates and the actuary's materiality standard.

In the case of Fictitious, Smith concludes that there are significant risks that could result in the net reserve amount deviating adversely from that recorded by the company by a material amount. This conclusion was determined in part quantitatively, by comparing the distance between the company's net recorded loss and LAE reserve and the high end of Smith's range to his materiality standard.

As shown in the Smith's Actuarial Opinion Summary for the company, he has developed a range of reasonable unpaid loss and LAE claim estimates on a net of reinsurance basis of $43

[112] *2011 NAIC Annual Statement Instructions Property/Casualty,* page 13.

million to $57 million with a point estimate of $50 million. The distance between the company's recorded reserve of $51.556 million and the high end of Smith's range is $5.443 million. Smith's materiality standard is $5.156 million, which is less than the distance between the high end of his range and the recorded reserve. This means that a deviation of $5.156 million is reasonably expected by Smith, as it lies within his range relative to the recorded balance. The compilation of these figures is shown in Table 57.

TABLE 57

	WS Actuarial Consulting				Carried +
				Fictitious	Materiality
	Low	Point	High	Carried	Standard
Reserve estimates	43,000	50,000	57,000	51,557	56,713

Stated differently, Smith reasonably expects that the company's carried reserve could deviate by an amount equal to the materiality standard since the carried reserve plus the materiality standard lies within his range of reasonable unpaid claim estimates. The results of his quantitative analysis, coupled with his knowledge of the significant risks and uncertainties inherent in the company's reserves, lead Smith to conclude that there are significant risks and uncertainties that could result in material adverse deviation in the recorded reserves.

It is important to note that there is no requirement for an actuary to provide a range. And even when a range is provided, the actuary may believe there are significant risks and uncertainties that could result in material adverse deviation despite the results of the calculation described above. For example, a company might have a significant portion of its gross loss and LAE reserves ceded to a reinsurer of relatively weak financial strength. In this case, the carried net reserve plus materiality standard might exceed the high end of the actuary's range (assuming all reinsurance was considered valid and collectible in determining the range). However, the risk that the company may not be able to recover a portion of its gross reserves due to the financial strength of one of its reinsurers may be considered significant by the actuary, and lead him/her to conclude the carried net reserves could deviate adversely by a material amount. Therefore, both qualitative and quantitative considerations should be considered in determining whether there are significant risks that could result in material adverse deviation.

REMAINING RELEVANT COMMENTS

The remaining relevant comments in Smith's opinion speak to the disclosure items in Exhibit B, addressing the fact that the company anticipates salvage and subrogation in its reserves totaling $1.363 million and discounts its reserves for certain workers' compensation and other liability claims on a tabular basis, the amount of which totals $1.365 million.

According to Smith, the company does not have claims-made extended reporting endorsement loss and expense reserves, participate in any underwriting pools or associations or write material amounts of long-duration policies.

As noted, retroactive and financial reinsurance is addressed in the relevant comments section. The liability for the one retroactive reinsurance assumed contract that the company has is deemed immaterial to Smith.

Finally, Smith has disclosed in his opinion that IRIS ratios 11, 12 and 13 did not produce unusual values for the company. We have confirmed this statement in our recalculation of Fictitious' IRIS ratios in Appendix I of this publication.

SIGNATURE OF THE APPOINTED ACTUARY

The SAO closes with an affirmative statement that an actuarial report supporting the SAO will be provided to the company and retained for a period of seven years at its administrative offices and will be made available for regulatory examination, if requested.

The SAO is signed and dated by the actuary for delivery along with the Annual Statement by March 1 of the year following the Annual Statement date (December 31). Note that some states require an original signature on each signed opinion, as opposed to a photocopy. The signature line includes the actuary's address (both postal and email).

Smith signed the opinion on February 24, 2012.

CHAPTER 17. ACTUARIAL OPINION SUMMARY SUPPLEMENT

OVERVIEW

The Actuarial Opinion Summary Supplement (AOS) is required to be filed by the company with its domiciliary state by March 15 of the year following the Annual Statement date (December 31). This is a confidential document containing the appointed actuary's range of unpaid claim estimates and/or point estimate, as calculated by the actuary, in comparison to the company's recorded reserves on a net and gross of reinsurance basis. Due to its confidential nature, it is filed separately from the public Annual Statement document, which is due on March 1.

Non-domiciliary states that provide evidence of the ability to preserve the confidential nature of the document may request a copy.

The AOS also provides a statement regarding whether the company has experienced one-year adverse development in excess of 5% of surplus in three or more of the past five years. The amount of adverse development is computed in Schedule P, Part 2, Summary, and is also provided in the one year development line of the Five-Year Historical Data exhibit within the Annual Statement. If the company has experienced adverse development in excess of 5% of surplus in three or more of the past five years, an explanatory paragraph is required so that the regulator can determine what additional review, if any, is required.

Prior to 2011, the actuary had the choice of providing his or her range, point estimate, or both, regardless of whether the actuary calculated both. In 2011, the instructions changed, requiring the actuary to include the point estimate and range, if both are calculated. If only one is calculated, the actuary would need only to provide one.

Because the AOS document is confidential, it is not available for public review, unlike the Statement of Actuarial Opinion (SAO). As a result, the student will not be able to find the AOS for the companies listed on the Casualty Actuarial Society *Syllabus of Basic Education*. However, we created an AOS for Fictitious Insurance Company, which is provided in Appendix I of this publication and should be read side by side with this chapter of the publication.

Like the SAO, the AOS is signed and dated by the actuary. In the case of Fictitious, this is Mr. William H. Smith. As we see in items A and B, Smith has produced a range and point estimate in his independent analysis of unpaid claims supporting the SAO. Items A and B include his range and point estimate on a net and gross of reinsurance basis, as displayed in Table 58.

TABLE 58

	Net Reserves (USD in 000s)			Gross Reserves (USD in 000s)		
	Low	Point	High	Low	Point	High
A. Actuary's range of reserve estimates	43,000		57,000	52,000		68,000
B. Actuary's point estimate		50,000			60,000	

Item C provides the company's carried loss and loss adjustment expense (LAE) reserves on which the actuary has based his opinion. Item D highlights the company's position within the actuary's range by showing the difference between the carried loss and LAE reserves and the actuary's range and point estimate. In Table 59 we see that Fictitious' recorded reserves lie above Smith's point estimate.

TABLE 59

	Net Reserves (USD in 000s)			Gross Reserves (USD in 000s)		
	Low	Point	High	Low	Point	High
C. Company carried reserves		51,557			61,699	
D. Difference between Company carried and Actuary's estimate (C. - A. and C. – B., if applicable)	8,557	1,557	(5,443)	9,699	1,699	(6,301)

It is not surprising that Fictitious' recorded reserves lie within the high end of the actuary's range given that the Fictitious' recorded loss and LAE reserves have developed favorably over time. This favorable development is seen in the one-year development line of the Five-Year Historical Data exhibit within Fictitious' 2011 Annual Statement. At the risk of being repetitious (see Table 13), we show the one-year development line again in Table 60.

TABLE 60

Data from Fictitious Insurance Company 2011 Five-Year Historical Data					
	2011	2010	2009	2008	2007
73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2 — Summary, Line 12, Column 11); *USD in 000s*	(875)	(1,354)	(1,618)	(1,935)	(1,918)
74. Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year end (Line 73 divided by Page 4, Line 21, Column 1 x 100)	(2.8)	(3.8)	(5.0)	(5.6)	(2.6)

While the AOS only displays the company's current position within the actuary's range, the AOS Instructions require that the actuary state whether the company has experienced one-

year adverse development in excess of 5% of surplus in three or more of the past five years. This and an explanation are provided in Item E of the AOS. The information contained in Item E enables the regulator to obtain an understanding of why the company's recorded reserves continue to show adverse development over time. The concern, of course, is whether the company is consistently understating reserves and therefore overstating surplus. Depending on the result, the information provided in Item E could trigger additional regulatory review in assessing the company's financial health. As shown in Table 60, Fictitious' loss and LAE reserves have developed favorably in each of the past five years. As a result, Smith has responded with the following in Item E of his AOS:

> E. The Company has not had 1-year adverse development in excess of 5% of surplus in at least three of the last five calendar years, as measured by Schedule P, Part 2 Summary, and disclosed in the Five-Year Historical Data, on line 74, of the Company's December 31, 2011 statutory-basis Annual Statement.

In those cases where there has been adverse development in excess of 5% of surplus in three or more of the last five years, we have seen explanations in Item E vary from providing vague detail to very specific reasons for the changes. The more detail that can be provided as to the root cause, the easier time the regulator will have in his or her review.

To illustrate we have provided sample wording in the 2011 AOS of a fictional company that experienced one-year development in excess of 5% of surplus during 2008 through 2010:

> The company had one-year adverse development in excess of 5% of statutory surplus in three of the past five years. The exceptional values occurred in years 2008 through 2010. The exceptional values resulted from a strengthening in loss reserves made by management to reflect unexpected trends in asbestos and environmental claims on excess liability policies written by the company from 1968 to 1986.
>
> These trends include increased likelihood of exposure to higher-layer policies as a result of greater than expected emergence of reported claims on underlying policies, and efforts by insureds to expand coverage periods and expose additional policies.
>
> It should be noted that in 2011 the company entered into a retroactive reinsurance agreement whereby 100% of this run-off business is ceded to an unaffiliated reinsurance company. Going forward, this reinsurance agreement will mitigate the impact of adverse development of loss reserves on the company's statutory surplus.

The regulator reading the above will determine whether additional steps are necessary to understand the cause of the adverse development and impact on the company's financial health. While the regulator may gain comfort that the company's balance sheet is protected against future adverse development as a result of the new reinsurance agreement, we expect that the regulator would want to understand the impact of such development on the financial health of the company's unaffiliated reinsurer.

CHAPTER 18. INSURANCE EXPENSE EXHIBIT

OVERVIEW

As discussed in *Chapter 4. Primary Financial Statements*, the Statement of Income within the Annual Statement provides a view of an insurance company's profitability over the past year on a net of reinsurance basis, but only on an aggregate level for all lines of business combined. The Insurance Expense Exhibit (IEE) enables a deeper review of an insurance company's profitability by showing the components of statutory profit (loss) by line of business on a direct and net of reinsurance basis.

The IEE is required to be filed by April 1 of the year following the Annual Statement date (December 31). It contains three parts plus interrogatories. Part I provides an allocation of the other underwriting expense category within Part 3, Expenses, of the Underwriting and Investment Exhibit (U&IE) of the Annual Statement. Parts II and III allocate pretax profit by line of business, on a net and direct written basis, respectively. All dollars are shown in thousands within the IEE, either by rounding or truncating.

The uses of the IEE are numerous. The following provides some examples:

- Regulators use the IEE as a means for monitoring financial health. Changes or historical trends in an insurance company's profitability at the line of business level may put a strain on the company's surplus in total, thereby threatening solvency.
- Regulators also use the IEE as a means to monitor rate adequacy. Inadequate rates also threaten an insurance company's financial health. Conversely, excessive rates are also a concern to the regulator as they are unfair to the consumer.
- Stakeholders in general use the IEE as a means to identify those lines of business that have performed profitably and those that have not in order to make informed business decisions, such as where to deploy capital and/or where the company should grow.
- An investor might look at the IEE in light of the company's future growth plans to make decisions as to how much to invest in the company. Growth into unprofitable lines might lead the investor to reduce his or her level of investment in the company.
- Actuaries use the IEE as a publicly available source of premium, loss and expense data for benchmarking company performance by line of business.

As we shall see, there are cautions to using the IEE as described above, and we have presented several within this chapter.

Throughout our discussion of the IEE, we will continue to use Fictitious Insurance Company in our examples.

PART I — ALLOCATION TO EXPENSE GROUPS

The National Association of Insurance Commissioners (NAIC) instructions to the Property/Casualty Annual Statement provide directions for classifying expenses to the 22 operating expense categories provided in Part 3, Expenses, of the U&IE within the Annual Statement. The instructions provide uniformity in classification of expenses among property/casualty insurance companies.

The 22 operating expense categories are as follows, by line number per the U&IE, Part 3, Expenses:

1. Claims adjustment services
2. Commission and brokerage
3. Allowances to managers and agents
4. Advertising
5. Boards, bureaus and associations
6. Surveys and underwriting reports
7. Audit of assureds' records
8. Salary and related items
9. Employee relations and welfare
10. Insurance
11. Directors' fees
12. Travel and travel items
13. Rent and rent items
14. Equipment
15. Cost or depreciation of Electronic Data Processing (EDP) equipment and software
16. Printing and stationery
17. Postage, telephone and telegraph, exchange and expenses
18. Legal and auditing
20. Taxes, licenses and fees
21. Real estate expenses
22. Real estate taxes
24. Miscellaneous

Amounts for the above operating expenses are each allocated into the following three categories (column headings) within the U&IE:

1. Loss Adjustment Expenses
2. Other Underwriting Expenses
3. Investment Expenses

Part 1 of the IEE further allocates other underwriting expenses into the following three components (column headings):

1. Acquisition, Field Supervision and Collection Expenses
2. General Expenses
3. Taxes, Licenses and Fees

The allocation of other underwriting expenses from the U&IE, Part 3, Expenses, into Part I of the IEE is as follows:

- All commission and brokerage expenses from line 2 of U&IE, Part 3 should be allocated to acquisition, field supervision and collection expenses in column 2 of Part I of the IEE.
- All taxes, licenses and fees from line 20 of U&IE, Part 3 should be allocated to taxes, licenses and fees in column 4 of Part I of the IEE.
- The remaining operating expenses from lines 3 through 18 of the IEE can be allocated to acquisition, field supervision and collection expenses in column 2 or general expenses in column 3 of Part I of the IEE, as applicable.

Part 1 of the IEE looks like Part 3, Expenses, of the U&IE within the Annual Statement, except:

1. There are three columns under the other underwriting expenses heading, rather than one in total.
2. The operating expense classification line items end with line 25, total expenses incurred, and therefore do not include amounts unpaid, amounts relating to uninsured plans or total expenses paid (lines 26 through 30 of U&IE, Part 3).
3. Amounts are reported in thousands of dollars in the IEE rather than in whole dollars as in the U&IE.

The totals in column 4 of the U&IE, Part 3, line 25 should equal the totals in column 6 of Part I of the IEE multiplied by 1,000.

Table 61 provides the other underwriting expenses column from Part3, Expenses, of the U&IE from Fictitious' 2011 Annual Statement, with the allocation to acquisition, field supervision and collection expenses, general expenses, and taxes licenses and fees, as in Part I of the company's 2011 IEE.

TABLE 61

	Annual Statement	Insurance Expense Exhibit		
	Underwriting and Investment Exhibit	Other Underwriting Expenses (USD in 000s)		
	Part 3 - Expenses	Part 1 - Allocation to Expense Groups		
	Column 2	Column 2	Column 3	Column 4
Operating Expense Classifications	Other Underwriting Expenses	Acquisition, Field Supervision and Collection Expenses	General Expenses	Taxes, Licenses and Fees
2. Commission and brokerage				
2.1 Direct excluding contingent	4,759,000	4,759		
2.2 Reinsurance assumed, excluding contingent	-	-		
2.3 Reinsurance ceded, excluding contingent	816,000	816		
2.4 Contingent - direct	121,000	121		
2.5 Contingent - reinsurance assumed	-	-		
2.6 Contingent - reinsurance ceded	9,000	9		
2.7 Policy and membership fees	-	-		
2.8 Net commission and brokerage (2.1 + 2.2 - 2.3 + 2.4 + 2.5 - 2.6 + 2.7)	4,055,000	4,055	-	-
3. Allowances to manager and agents	4,000	1	3	
4. Advertising	208,000	75	133	
5. Boards, bureaus and associations	106,000	38	68	
6. Surveys and underwriting reports	99,000	36	63	
7. Audit of assureds' records	-	-	-	
8. Salary and related items:		-	-	
8.1 Salaries	1,845,000	664	1,181	
8.2 Payroll taxes	115,000	41	74	
9. Employee relations and welfare	293,000	105	188	
10. Insurance	23,000	8	15	
11. Directors' fees	-	-	-	
12. Travel and travel items	95,000	34	61	
13. Rent and rent items	133,000	48	85	
14. Equipment	42,000	15	27	
15. Cost or depreciation of EDP equipment and software	330,000	119	211	
16. Printing and stationery	19,000	7	12	
17. Postage, telephone and telegraph, exchange and express	112,000	40	72	
18. Legal and auditing	14,000	5	9	
19. Totals (Lines 3 to 18)	3,438,000	1,236	2,202	-
20. Taxes, licenses and fees:				
20.1 State and local insurance taxes deducting guaranty association credits of $1,103	791,000			791
20.2 Insurance department licenses and fees	53,000			53
20.3 Gross guaranty association assessments	(2,000)			(2)
20.4 All other (excluding federal and foreign income and real estate)	18,000			18
20.5 Total taxes, licenses and fees (20.1 + 20.2 + 20.3 + 20.4)	860,000	-	-	860
21. Real estate expenses	-			
22. Real estate taxes	-			
23. Reimbursements by uninsured plans	-			
24. Aggregate write-ins for miscellaneous expenses	130,000	47	83	
25. Total expenses incurred	8,483,000	5,338	2,285	860

PART II — ALLOCATION TO LINES OF BUSINESS NET OF REINSURANCE

Part II provides the components of total profit (loss) on a pretax basis, net of reinsurance, and additional information needed to calculate net profit (loss) for the line of business segments used in the U&IE of the Annual Statement. The line of business segments differ slightly from the U&IE in the following ways:

- Allied lines are broken down into further components in the IEE as:
  - 2.1 Allied lines
  - 2.2 Multiple peril crop
  - 2.3 Federal flood
- Commercial multiple peril is broken down into further components in the IEE as:
  - 5.1 Commercial multiple peril (non-liability portion)
  - 5.2 Commercial multiple peril (liability portion)
- Medical professional liability occurrence and claims-made lines are combined in the IEE into line 11, as are the corresponding product liability lines into line 18.
- Auto physical damage is broken down into further segments in the IEE as:
  - 21.1 Private passenger auto physical damage
  - 21.2 Commercial auto physical damage
- Reinsurance lines 31 through 33 are summed in the IEE.

Line 35 of the IEE provides the totals for all lines of business in lines 1 through 34.

Similar to the U&IE, the line of business segments are displayed in the first column of the IEE, with the components of profit (loss) and additional items in the remaining columns, providing the amounts (or percentages) for each line of business. These components and additional items are as follows:

- Net premiums written
- Net premiums earned
- Dividends to policyholders
- Incurred:
  - Loss
  - Defense and cost containment (DCC)
  - Adjusting and other (A&O) expenses
- Unpaid:
  - Loss
  - DCC
  - A&O expenses

- Unearned premium reserves
- Agents' balances
- Other underwriting expenses:
  - Commission and brokerage expenses incurred
  - Taxes, licenses and fees incurred
  - Other acquisitions, field supervision and collection expenses incurred
  - General expenses incurred
- Other income less other expenses
- Pre-tax profit or loss excluding all investment gain
- Investment gain on funds attributable to insurance transactions
- Profit or loss excluding investment gain attributable to capital and surplus
- Investment gain attributable to capital and surplus

The above items are organized in two columns: the first containing the dollar amount and the second providing the ratio of the dollar amount to premiums earned. There are 42 columns: 21 provide dollar amounts (odd-numbered columns) and 21 provide percentages to earned premium (even-numbered columns).

Total profit (loss) is calculated using the same components as in the Statement of Income, with the exception that the IEE is on a pretax basis. *Most* of the aforementioned components used to compute pretax profit (loss) either reconcile directly to exhibits within the Annual Statement, or are reasonably straightforward for companies to compute.[113] However, the calculation of investment gain is not straightforward, as the allocation of investment gain by line of business is not intuitive.

We will discuss the computation of each component (odd-numbered columns), reconciling to Annual Statement exhibits, and provide example(s) as to how to calculate investment gain. We will not address the even-numbered columns, other than to say that they represent the ratio of the dollar amount to net earned premium, on a line-by-line basis.

There are numerous ways to estimate profit by line of business; the approach used by the NAIC for the IEE is only one of them. The NAIC approach is a retrospective one. It allocates total profit that has emerged rather than providing an estimate of future profit, as is used in pricing insurance policies.

Further, the allocation of surplus by line of business does not consider how much surplus is needed to support the line, as is the intention in pricing insurance policies and capital

[113] According to page 419 of the *2011 NAIC Annual Statement Instructions Property/Casualty*, "In instances where the reporting entity cannot allocate amounts to lines of business by direct and accurate allocation, the methods of allocation stated in the Uniform Classification of Expenses found in the Appendix of the *NAIC Annual Statement Instructions* must be used. Where the instructions do not define means of allocation, a reasonable method of allocation must be applied and disclosed in Interrogatory 4."

modeling. Rather, as we shall see, the entire amount of surplus is allocated by line based on the level of the company's reserves (loss and unearned premium) and earned premium, which do not necessarily measure the inherent risk of a particular line of business. Good examples are catastrophe-exposed short-tailed lines, such as homeowners. In non-catastrophe years, the reserves for these lines may be relatively small because claims are reported and paid out relatively quickly when compared to longer-tailed casualty lines. However, as the property/casualty insurance industry observed in 2011, this short-tailed line of business is exposed to considerable risk. We shall see this in our examples for Fictitious. Therefore, caution should be made when reviewing and placing reliance on the results of the IEE calculations of surplus and profit by line of business for pricing or capital allocation purposes.

Columns 1 through 32

The following components or items within Part II reconcile directly to the U&IE within the Annual Statement by line of business as follows:

TABLE 62

IEE Part II		Reconciles to	U&IE		
Column Number	Heading		Part	Heading	Column Number
1	Premiums Written	-------->	1B	Net Premiums Written	6
3	Premiums Earned	-------->	1	Premiums Earned During Year	4
7	Incurred Loss	-------->	2	Losses Incurred Current Year	7
13	Unpaid Losses	-------->	2A	Net Losses Unpaid	8
19	Unearned Premium Reserves	-------->	1A	Total Reserve for Unearned premiums	5

Dividends to policyholders in column 5 reconcile in total to the amount in the Statement of Income of the Annual Statement, line 17. The allocation by line of business is based on the policies eligible and receiving dividends or on a company's formulaic determination if the line of business per the policy does not correspond directly to a line of business in the Annual Statement.[114]

Loss adjustment expense (LAE), provided separately for DCC and A&O expenses incurred and unpaid, in columns 9, 11, 15 and 17 of the IEE, cannot be found within the Annual Statement for the line of business breakdowns required in the IEE. However, insurance companies track expenses by line of business and therefore know which expenses are allocated to which lines. In total, the LAE incurred amounts in columns 9 plus 11 reconcile to the Statement of Income, line 3, column 1 (current year) and Part 3 of the U&IE, line 25, column 1. The LAE unpaid

[114] Feldblum, S., "The Insurance Expense Exhibit and the Allocation of Investment Income" (Fifth Edition), CAS Study Note, May 1997, page 32.

amounts reconcile to page 3 of the Annual Statement, line 3, column 1 (current year) and Part 2A of the U&IE, line 35, column 9.

Like policyholder dividends, insurance companies know which lines agents' balances stem from and therefore can allocate the amounts directly in column 21. The amounts should agree to balances included within lines 15.1 plus 15.2, column 3 of the Assets page of the Annual Statement.

Other underwriting expenses in columns 23, 25, 27 and 29 reconcile directly to Part I of the IEE.

Other income less other expenses in column 31 of the IEE reconciles in total to line 15 minus line 5 of the Statement of Income. Line 15 of the Statement of Income provides total other income incurred, and line 5 provides aggregate write-ins for underwriting deductions. The allocation by line is performed directly by accumulating the sources of other income and underwriting deductions on specific policies and mapping the income/deductions by policy to the Annual Statement lines of business.

Calculation of Pretax Profit or Loss Excluding All Investment Gain (Column 33)

Column 33 provides pretax profit (loss) excluding all investment gains and is calculated from the information contained in the previous columns of Part II of the IEE as follows:

Pretax profit (loss) excluding all investment gains =

Premiums earned (column 3)
- Dividends to policyholders (column 5)
- Incurred loss (column 7)
- DCC expenses incurred (column 9)
- A&O expenses incurred (column 11)
- Commission and brokerage expenses incurred (column 23)
- Taxes, licenses and fees incurred (column 25)
- Other acquisitions, field supervision and collection expenses incurred (column 27)
- General expenses incurred (column 29)
+ Other income less other expenses (column 31).

Simply put, pretax profit equals inflows of earned revenue minus outflows of incurred expenses.

The total amount in column 33 reconciles to line 18 (net income after dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes) *minus* line 11 (net investment gain (loss)) of the Statement of Income.

Table 63 demonstrates the calculation of column 33 of Part II of the IEE *in total* and shows the reconciliation to the Statement of Income within the Annual Statement for Fictitious in

2011. Recall that figures in the IEE are provided in thousands; any differences from the Statement of Income are due to rounding errors.

TABLE 63

Data from Fictitious Insurance Company 2011 IEE (USD in 000s) for All Lines of Business			
Column Number	IEE Part II Column Heading	Total Line 35	Statement of Income Reference
3	Premiums Earned	26,512	Line 1
5	Dividends to Policyholders	46	Line 17
7	Incurred Loss	16,907	Line 2
9	Defense and Cost Containment Expenses Incurred	1,671	
11	Adjusting and Other Expenses Incurred	1,585	
	Subtotal Loss Adjustment Expenses Incurred	3,256	Line 3
23	Commissions and Brokerage Expenses Incurred	4,055	
25	Taxes, Licenses and Fees Incurred	860	
27	Other Acquisitions, Field Supervision and Collection Expenses Incurred	1,283	
29	General Expenses Incurred	2,285	
	Subtotal Other Underwriting Expenses Incurred	8,483	Line 4
31	Other Income Less Other Expenses	33	Line 15 minus Line 5
33	Pre-Tax Profit or Loss Excluding All Investment Gain	(2,147)	= Line 1 - Lines 17, 2, 3, 4 + Line 15

As displayed in Table 63, Fictitious operated at a pretax loss (before any gains or losses from investments) of $2.1 million in 2011, most of which was due to underwriting (underwriting loss totaled $2.1 million as per line 8 of the Statement of Income). Net incurred loss and LAE during 2011 was $4.4 million higher than that incurred in 2010, with less than $1 million more in net earned premium. As previously explained, this was due to the high frequency of catastrophe losses incurred by Fictitious in 2011.

Of the $2.1 million pretax loss (before investment gain), $1.2 million stems from the homeowners of business. Homeowners is the largest line of business written by the company in terms of net written premium volume ($4.6 million per column 1 of the IEE, Part II). Further, the homeowners line was hit hardest by the unprecedented catastrophe losses in 2011. Given its significance to the 2011 results, we will use homeowners as the line of business example for computing total profit or loss for Fictitious.

The remaining columns, columns 35 through 41, are determined formulaically and are the crux of Part II of the IEE.

Overview of the Calculation of Total Profit or Loss (Column 41)

Column 41 provides total profit (loss) on a pretax basis to an insurance company for each line of business. It is computed by taking pretax profit (loss) *before* any investment gain and adding investment gains.

Column 41 of the IEE is equal to net income as calculated in the Statement of Income within the Annual Statement, except all amounts in the IEE are gross of taxes. Column 41 reconciles

to line 18 (net income after dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes) *plus* the amount of capital gains tax provided in line 10 (Net realized capital gains (losses) less capital gains tax) of the Statement of Income. Capital gains taxes are added back to the calculation simply because total profit is shown on a pretax basis.

Table 64 demonstrates the calculation of column 41 of Part II of the IEE *in total* and shows the reconciliation to the Statement of Income within the Annual Statement for Fictitious in 2011.

TABLE 64

Data from Fictitious Insurance Company 2011 IEE (USD in 000s) for All Lines of Business			
Column Number	IEE Part II Column Heading	Total Line 35	Statement of Income Reference
33	Pre-tax Profit or Loss Excluding All Investment Gain	(2,147)	= Line 1 - Lines 17, 2, 3, 4 + Line 15
35	Investment Gain on Funds Attributable to Insurance Transactions	2,663	
39	Investment Gain Attributable to Capital and Surplus	1,741	
	Subtotal Net Investment Gain (Loss) *Before* Capital Gains Tax	4,404	Line 11 + Capital Gains Tax of $99 per Line 10
41	Total Profit or Loss	2,257	Line 18 + Capital Gains Tax of $99 per Line 10

As displayed in Table 64, investment income net of expenses ($4.4 million) more than offset the Fictitious' underwriting loss in 2011.

The same formula is used to calculate total profit or loss (column 41) for each line of business. The tricky part, of course, is how to allocate investment gain (loss) by line of business and between funds attributable to insurance transactions versus those attributable to capital and surplus. The following provides an overview of the allocation procedure, with details in the subsequent sections.

The first step of the calculation is to determine the ratio of net investment gain (loss) to total investable assets then apply that ratio to investable assets by line of business. This calculation provides net investment gain (loss) by line. The ratio of net investment gain (loss) to total investable assets is called the net investment gain ratio.

The second step is to apply the net investment gain ratio to funds attributable to insurance transactions by line of business. This calculation provides investment gain on funds attributable to insurance transactions in column 35.

Investment gain attributable to capital and surplus in column 39 is computed as the difference between net investment gain (loss) and investment gain on funds attributable to insurance transactions in column 35. Formulaically, for each line of business,

Investment gain attributable to capital and surplus (column 39) =

Net investment gain (loss)[115]
- Investment gain on funds attributable to insurance transactions (column 35).

As indicated, both of the inputs in the calculation of investment gain attributable to capital and surplus (column 39) are determined by applying the ratio of net investment gain (loss) to total investable assets for all lines of business to the applicable investable funds (either in total or attributable to insurance transactions) associated with the particular line of business.

Net Investment Gain Ratio

The net investment gain ratio is the ratio of net investment gain (loss) to total investable assets. Total investable assets equal the sum of net loss and LAE reserves, net unearned premium reserves, ceded reinsurance payable and policyholders' surplus, minus agents' balances. These amounts are intended to be a proxy for investable assets as they are amounts that are available for investment by the insurance company.[116] Agents' balances are subtracted in the formula because they are not investable assets.

In the calculation of total investable assets, the mean of the aforementioned amounts are used (i.e., average of the prior year and current year) because investment income during the year is earned on reserves and surplus throughout the year, rather than a fixed point in time.

Formulaically, the net investment gain ratio is calculated as follows, for all lines of business in total:

Net investment gain ratio =

$$\frac{\text{Net investment gain (loss)}}{\text{Total investable assets}}$$

where,

Total investable assets =

Mean net loss and LAE reserves
+ Mean net unearned premium reserves
+ Mean ceded reinsurance premiums payable
+ Mean policyholders' surplus
- Mean agents' balances.

[115] The calculation of net investment gain (loss) is provided in subsequent paragraphs below.

[116] Going back to basics, assets minus liabilities equals surplus. Or equivalently, assets equals liabilities plus surplus. Reserves and ceded reinsurance payables are liabilities that the insurance carrier must hold. As with surplus, the company can invest these liabilities. They are therefore used in the calculation to represent investable assets.

Table 65 demonstrates the calculation of the net investment gain ratio based on 2011 Annual Statement data for Fictitious.

TABLE 65

Data from Fictitious Insurance Company 2011 IEE and Annual Statement (USD in 000s)						
	All Lines of Business	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement
(1)	**Net Investment Gain Ratio**	**5.0%**				= (2) current year divided by (3) mean
(2)	**Net Investment Gain (loss) *before* Capital Gains Tax**	**4,404**				Statement of Income Page 4, Line 11 plus Capital Gains Tax of $99 per Line 10
(3)	**Investable Assets**	87,744	87,186	**87,465**		= (4) + (5) + (6) + (7) + (8) - (9)
(4)	**Net Loss Reserve**	41,894	40,933	41,414	Column (13)	U&IE, Part 2A, Total line, Column 8, divided by 1,000
(5)	**Net Loss Adjustment Expense Reserve**	9,663	9,664	9,664	Column (15) + (17)	U&IE, Part 2A, Total line, Column 9, divided by 1,000
(6)	**Net Unearned Premium Reserve**	11,895	11,557	11,726	Column (19)	U&IE, Part 1A, Total line 38, Column 4, divided by 1,000
(7)	**Policyholders' Surplus**	31,024	31,608	31,316		Liabilities, Surplus and Other Funds, Page 3, Line 37, divided by 1,000
(8)	**Ceded Reinsurance Premiums Payable**	440	608	524		Liabilities, Surplus and Other Funds, Page 3, Line 12, divided by 1,000
(9)	**Agents' Balances**	7,172	7,184	7,178	Column (21)	Equals the portion of Assets Line 15.1 plus 15.2, divided by 1,000, for Agents' Balances

As displayed above, the 2011 investment gain ratio for Fictitious was 5%. This means the company earned 5% on its "investable assets" during 2011.

Net Investment Gain (Loss) by Line of Business

Net investment gain (loss) by line of business is determined as the investment gain ratio multiplied by total investable assets for that line of business.

Net investment gain (loss) for a particular line of business =

Net investment gain ratio (for all lines)
* Total investable assets for the line of business

where,

Total investable assets for the line of business =

Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business
+ Mean ceded reinsurance premiums payable for the line of business
+ Mean policyholders' surplus for the line of business
- Mean agents' balances for the line of business.

Table 66 demonstrates the calculation of the net investment gain for the homeowners line of business based on 2011 Annual Statement and IEE data for Fictitious.

TABLE 66

Data from Fictitious Insurance Company 2011 IEE and Annual Statement (USD in 000s)

Line of Business: Homeowners Multiple Peril		2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement (AS)
(1)	Investment Gain for Line of Business	232			Column (35)	= (3) Current Year * (3) Mean
(2)	Net Investment Gain Ratio (all lines of business)	**5.0%**				Calculated in Table 65
(3)	Investable Funds for Line of Business			4,603		= (4) + (5) + (6) + (7) - (8) + (9)
(4)	Net Loss Reserve for Line of Business	1,311	1,161	**1,236**	Column (13)	U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000
(5)	Net Loss Adjustment Expense Reserve for Line of Business	144	170	**157**	Column (15) + (17)	U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS
(6)	Net Unearned Premium Reserve for Line of Business	2,401	2,290	**2,346**	Column (19)	U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS
(7)	Ceded Reinsurance Premiums Payable for Line of Business	21	3	**12**		Calculated in Table 67
(8)	Agents' Balances for Line of Business	1,901	2,134	**2,018**	Column (21)	IEE, Column 21, line 4 provided in each of the 2011 and 2010 AS
(9)	Surplus Allocable to Line of Business			**2,869**		Calculated in Table 69

As displayed in Table 66, $232,000 of the company's total $4.4 million in net investment gain during 2011 was allocated to the homeowners line using the NAIC's approach.

The net loss and LAE reserves, unearned premium reserves and agents' balances by line of business used in the above calculation come from columns 13, 15, 17, 19 and 21 of the IEE,

current year and prior year, respectively. Ceded reinsurance premiums payable by line and policyholders' surplus by line, are calculated separately.

Ceded Reinsurance Premiums Payable by Line of Business

Ceded reinsurance premiums payable are allocated to line of business based on the distribution of ceded written premiums by line. Formulaically, the calculation is as follows:

Ceded reinsurance premiums payable for the line of business =

$$\frac{\text{Ceded written premiums for the line of business}}{\text{Total ceded written premiums}} * \text{Total ceded reinsurance premiums payable.}$$

Table 67 demonstrates the calculation of Fictitious' ceded reinsurance premiums payable for homeowners.

TABLE 67

Data from Fictitious Insurance Company 2010 and 2011 Annual Statement (USD in 000s)

Line of Business: Homeowners Multiple Peril	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement (AS)
(1) Ceded Reinsurance Premiums Payable for Line of Business	21	3	12	N/A	= (4) * (5)
(2) Ceded Premiums Written for Line of Business	91	12		N/A	U&IE, Part 1B, Line 4, Columns 4 + 5, divided by 1,000; and prior year AS
(3) Ceded Premiums Written, Total	1,882	2,149		N/A	U&IE, Part 1B, Totals, Columns 4 + 5, divided by 1,000; and prior year AS
(4) Ratio of Ceded Premiums Written for Line of Business to Total	4.8%	0.6%		N/A	= (2) / (3)
(5) Ceded Reinsurance Premiums Payable, Total	440	608		N/A	Liabilities, Surplus and Other Funds, Page 3, Line 12, divided by 1,000

The mean ceded reinsurance payable for homeowners that was used in the calculation of Fictitious' total investable assets for homeowners was $12 (dollars in thousands).

Policyholders' Surplus by Line of Business

The NAIC allocates surplus to line of business in proportion to the sum of net loss and LAE reserves, net unearned premium reserves and net earned premium. The mean values are used in the calculation of the balance sheet figures (reserves), while the current-year value is used for the income statement figure (net earned premium).

The first step in the calculation is to compute the ratio of mean policyholders' surplus to the sum of mean net loss and LAE reserves, mean net unearned premium reserves and current year net earned premiums, in total for all lines combined. This ratio is called the *surplus ratio*.

Surplus ratio =

Mean policyholders' surplus in total *divided by*
[Mean net loss and LAE reserves in total
+ Mean net unearned premium reserves in total
+ Current year net earned premium in total].

Table 68 demonstrates the calculation of the 2011 surplus ratio for Fictitious.

TABLE 68

Data from Fictitious Insurance Company 2011 IEE and 2010 and 2011 Annual Statement (USD in 000s)

All Lines of Business	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement (AS)
(1) Surplus Ratio	35.1%				= (2) / [Sum of means of (3) through (5) plus (6) for current year]
(2) Policyholders' Surplus	31,024	31,608	31,316		Liabilities, Surplus and Other Funds, Page 3, Line 37, Columns 1 and 2, respectively, divided by 1,000
(3) Net Loss Reserve	41,894	40,933	41,414	Column (13)	U&IE, Part 2A, Total line, Column 8, divided by 1,000; and prior year AS
(4) Net Loss Adjustment Expense Reserve	9,663	9,664	9,664	Column (15) + (17)	U&IE, Part 2A, Total line, Column 9, divided by 1,000; and prior year AS
(5) Net Unearned Premium Reserve	11,895	11,557	11,726	Column (19)	U&IE, Part 1A, Total line 38, Column 4, divided by 1,000; and prior year AS
(6) Net Earned Premium	26,512			Column (3)	U&IE, Part 1, Total line 35, Column 4, divided by 1,000

The surplus ratio for Fictitious was 35.1% in 2011.

The surplus ratio is then applied to the applicable mean balance sheet amounts and the income statement amount (earned premium) for the current year for the particular line of business to determine the amount of surplus allocated to that line.

Surplus allocated to line of business =

Mean surplus ratio (for all lines) *multiplied by*
[Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business
+ Current year net earned premium for the line of business].

Table 69 shows the application of the surplus ratio in determining the amount of surplus allocated to Fictitious' homeowners line of business.

TABLE 69

Data from Fictitious Insurance Company 2011 IEE and 2010 and 2011 Annual Statement (USD in 000s)

Line of Business: Homeowners Multiple Peril		2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement (AS)
(1)	Surplus Allocable to Line of Business			2,869		= (2) * [Sum of means of (3) through (5) plus (6) for current year]
(2)	Surplus Ratio	35.1%				Calculated in Table 68
(3)	Net Loss Reserve for Line of Business	1,311	1,161	1,236		U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000
(4)	Net Loss Adjustment Expense Reserve for Line of Business	144	170	157		U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS
(5)	Net Unearned Premium Reserve for Line of Business	2,401	2,290	2,346		U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS
(6)	Net Earned Premium for Line of Business	4,445			Column (3)	U&IE, Part 1, Line 4, Column 4, divided by 1,000

As displayed in Table 69, $2.9 million of the Fictitious' total $31 million in policyholders' surplus at year-end 2011 was allocated to the homeowners line using the NAIC's allocation approach. Stated differently, less than 10% of the company's policyholders' surplus was allocated to homeowners using the IEE allocation. This exemplifies the caution noted earlier in relying on this method for prospective pricing or even retrospective evaluation of profitability. Given the catastrophe risk inherent in this line of business, which is quite evident based on 2011 experience, one might expect more than 10% of the surplus to be allocated to this line. To provide some perspective, in 2011 we saw that homeowners contributed more than 50% of the company's underwriting loss. If the IEE allocation is used in pricing for Fictitious, the rates will be inadequate and could eventually result in the insolvency of Fictitious.

Investment Gain by Line of Business Attributable to Insurance Transactions

Investment gain attributable to insurance transactions is allocated to line of business by applying the net investment gain ratio to funds attributable to insurance transactions for the particular line. Funds attributable to insurance transactions for a particular line are equal to

the sum of mean net loss and LAE reserves, mean net unearned premium reserves and mean ceded reinsurance premiums payable for that line, reduced by agents' balances and the portion of prepaid expenses in the unearned premium reserves.

Funds attributable to insurance transactions for the line of business =

Mean net loss and LAE reserves for the line of business
+ Mean net unearned premium reserves for the line of business
+ Mean ceded reinsurance premiums payable for the line of business
- Mean agents' balances for the line of business
- Prepaid expenses in the unearned premium reserves.

The elements that go into the calculation of funds attributable to insurance transactions differ from total investable funds in two ways. First, mean policyholders' surplus is not included in the calculation of funds attributable to insurance transactions. This is because here the focus is on funds attributed to insurance transactions and not to capital and surplus. Second, prepaid expenses in the unearned premium reserves are not included in the calculation because they are not an investable asset; they have already been expensed. These expenses were not explicitly removed in the calculation of total investable funds because they are already out of policyholders' surplus, which is a component of the calculation.

Table 70 provides the calculation of investment gain attributable to insurance transactions for Fictitious' homeowners line.

TABLE 70

Data from Fictitious Insurance Company 2011 IEE and 2010 and 2011 Annual Statement (USD in 000s)

	Line of Business: Homeowners Multiple Peril	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement (AS)
(1)	Investment Gain on Funds Attributable to Insurance Transactions for Line of Business	53			Column (35)	= (2) Current Year * (3) Mean
(2)	Net Investment Gain Ratio (all lines of business)	5.0%				Calculated in Table 66
(3)	Funds Attributable to Insurance Transactions for Line of Business	1,283	829	1,056		= (4) + (5) + (6) + (7) - (9) - [(6) * (8)]
(4)	Net Loss Reserve for Line of Business	1,311	1,161	1,236	Column (13)	U&IE, Part 2, Line 4, Columns 5 and 6, divided by 1,000
(5)	Net Loss Adjustment Expense Reserve for Line of Business	144	170	157	Column (15) + (17)	U&IE, Part 2A, Line 4, Column 9, divided by 1,000; and prior year AS
(6)	Net Unearned Premium Reserve for Line of Business	2,401	2,290	2,346	Column (19)	U&IE, Part 1A, Line 4, Column 5, divided by 1,000; and prior year AS
(7)	Ceded Reinsurance Premiums Payable for Line of Business	21	3	12		Calculated in Table 67
(8)	Prepaid Expense Ratio	29%				Calculated in Table 71
(9)	Agents' Balances for Line of Business	1,901	2,134	2,018	Column (21)	

As displayed in Table 70, $53,000 of the company's total $232,000 in net investment gain on the homeowners line was attributed to gains on insurance transactions using the NAIC approach.

Prepaid Expense Ratio

The ratio that is used to determine the amount of unearned premium reserves representing prepaid expenses is calculated for each line of business separately. It is the ratio of net acquisition expenses to net written premiums (column 1). Net acquisition expenses are calculated as the sum of commissions and brokerage expenses incurred (column 23); taxes, licenses and fees incurred (column 25); other acquisition, field supervisions and collection expenses incurred (column 27); and half of the general expenses incurred (50% of column 29).

The prepaid expense ratio for homeowners is calculated for Fictitious in Table 71.

TABLE 71

Data from Fictitious Insurance Company 2011 IEE and 2010 and 2011 Annual Statement (USD in 000s)					
Line of Business: Homeowners Multiple Peril	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 4	Annual Statement
(1) Prepaid Expense Ratio	29%				= (2) / (7)
(2) Net Acquisition Expenses for Line of Business	1,315				= (3) + (4) + (5) + 50% of (6)
(3) Commissions and Brokerage Expenses Incurred for Line of Business	867			Column (23)	
(4) Taxes, Licenses and Fees Incurred for Line of Business	130			Column (25)	
(5) Other Acquisitions, Field Supervision and Collection Expenses Incurred for Line of Business	169			Column (27)	
(6) General Expenses Incurred for Lines of Business	298			Column (29)	
(7) Net Written Premium for Line of Business	4,555			Column (1)	

The prepaid expense ratio for Fictitious was 29% in 2011.

Investment Gain by Line of Business Attributable to Capital and Surplus

The difference between net investment gain (loss) and the amount of investment gain attributed to insurance transactions is the amount of investment gain attributable to capital and surplus. Table 72 provides this calculation for Fictitious.

TABLE 72

Data from Fictitious Insurance Company 2011 IEE (USD in 000s)					
Line of Business: Homeowners Multiple Peril	2011 Current Year	2010 Prior Year	Mean	2011 IEE Part II Total, Line 35	Annual Statement
(1) Investment Gain Attributable to Capital and Surplus for Line of Business	179			Column (39)	= (2) - (3)
(2) Investment Gain for Line of Business	232				Calculated in a Table 66
(3) Investment Gain on Funds Attributable to Insurance Transactions for Line of Business	53			Column (35)	Calculated in Table 70

As displayed in Table 72, the amount of investment gain attributable to capital and surplus for homeowners was $179,000.

Total profit or loss

Finally, column 41 provides total profit (loss) by line of business. Table 73 demonstrates the calculation of total profit in 2011 for Fictitious' homeowners line. First we will provide the calculation of pretax profit excluding all investment gain for homeowners, as shown in column 33. Then we will add the components of net investment gain in columns 35 and 39 to compute total profit in column 41.

Pretax profit excluding all investment gain is first computed for Fictitious' homeowners line of business as follows in Table 73.

TABLE 73

Data from Fictitious Insurance Company 2011 IEE (USD in 000s) for Homeowners Multiple Peril

Column Number	IEE Part II Column Heading	Total Line 4	Notes
3	Premiums Earned	4,445	
5	Dividends to Policyholders	-	
7	Incurred Loss	3,789	
9	Defense and Cost Containment Expenses Incurred	74	
11	Adjusting and Other Expenses Incurred	360	
23	Commissions and Brokerage Expenses Incurred	867	
25	Taxes, Licenses and Fees Incurred	130	
27	Other Acquisitions, Field Supervision and Collection Expenses Incurred	169	
29	General Expenses Incurred	298	
31	Other Income Less Other Expenses	1	
33	Pre-Tax Profit of Loss Excluding All Investment Gain	(1,241)	= Column 1 minus Columns 5, 7, 9, 11, 23,25, 27, 29 plus Column 31

As displayed in Table 73, the NAIC allocation formula shows that Fictitious experienced a pretax loss of $1.2 million on its homeowners book in 2011, nearly all of which came from underwriting (since other income is $1).

The calculation of column 41 of Part II of the IEE shows that investment gains only offset $232,000 of the $1.2 million underwriting loss, such that homeowners showed an overall loss, after investment gain, of $1.0 million.

TABLE 74

Data from Fictitious Insurance Company 2011 IEE (USD in 000s) for Homeowners Multiple Peril			
Column Number	IEE Part II Column Heading	Total Line 35	Statement of Income Reference
33	Pre-Tax Profit or Loss Excluding All Investment Gain	(1,241)	
35	Investment Gain on Funds Attributable to Insurance Transactions	53	
39	Investment Gain Attributable to Capital and Surplus	179	
	Subtotal Net Investment Gain (loss) *before* Capital Gains Tax	232	
41	Total Profit or Loss	(1,009)	
42	%	22.7%	= Column 41 divided by Column 3

Out of the total $2.3 million in pretax profit for all lines earned by Fictitious in 2011, -$1.0 million was allocated to homeowners based on the NAIC calculation. This represents -23% of net earned premium in 2011. A review of column 41 of IEE shows that Fictitious also experienced pretax losses in the other liability, automobile physical damage and fidelity lines. Profits were earned in other lines to absorb the losses in these lines of business, the largest of which was achieved in workers' compensation ($3.3 million). This is why companies diversify insurance risks across property/casualty lines of business; the intent is that any losses would be offset by gains.

PART III — ALLOCATION TO LINES OF BUSINESS DIRECT

Part III provides the components of direct profit (loss) on a pretax basis, excluding investment gain. Investment gain is not considered because investment income is earned on the actual assets held by the company, which are net of reinsurance.

Different from Part II, the components used to compute profit (loss) in Part III are not readily available from the Annual Statement as presented. Unless assigned with the task of completing the IEE at for their employer, most students will not use the information contained in Part III of the IEE. This publication is not intended to be an instruction manual for completing the IEE. As a result, we will only provide a brief discussion of the computation of each component, reconciling to Annual Statement exhibits when possible.

Columns 1 through 32

As with Part II, the even columns of Part III of the IEE provide the percent of the corresponding amounts in the odd-numbered columns to earned premium, in this case on a direct basis.

Direct premiums written in column 1 reconcile to Part 1B, Premiums Written, column 1, of the U&IE. Direct premiums written also reconcile to column 1 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line and in total to Schedule T, column 2, line 59.

Direct premiums earned in column 3 reconcile to column 2 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 3, line 59.

Dividends to policyholders in column 5 should agree to line 17 of the Statement of Income, excluding dividends associated with business assumed and ceded.

Incurred loss in column 7 reconciles to column 6 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 6, line 59.

DCC expenses incurred and unpaid in columns 9 and 15, respectively, reconcile to columns 9 and 10, of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business. Incurred expenses also reconcile in total to the U&IE, Part 3, Expenses, line 1.1 of column 1.

A&O expenses incurred and unpaid in columns 11 and 17, respectively, cannot be tied directly to amounts presented in the Annual Statement. The NAIC instructions state, "IEE Part III, columns 9, 11, 15 and 17 must agree with IEE Part II, columns 9, 11, 15 and 17, respectively, excluding expenses relating to reinsurance assumed and ceded."[117] An insurance company knows which expenses are allocated to which lines and can therefore complete these columns.

Unpaid losses in column 13 reconcile to column 7 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business, and in total to Schedule T, column 7, line 59.

Unearned premium reserves in column 19 reconcile to column 4 of the Exhibit of Premiums and Losses (Statutory Page 14 Data) by line, for all states plus any alien business.

Agents' balances in column 21 stem from policies written; therefore, companies know the applicable line of business. The amounts should agree to balances included within lines 15.1 plus 15.2, column 3 of the Assets page, excluding balances relating to reinsurance.

Other underwriting expenses in columns 23, 25, 27 and 29 cannot be found in the line of business breakdown of Part III. However, they should reconcile in total to the corresponding amounts in Part I of the IEE excluding amounts relating to reinsurance assumed or ceded. In fact, commissions and brokerage incurred on a direct basis in column 23 should reconcile in total to the sum of the amounts in line 2.1 plus 2.4 of IEE Part I, column 2.

Other income less other expense in column 31 also does not reconcile directly to amounts in the Annual Statement. However, the NAIC instructions note that it should agree in total to

[117] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 422.

amounts in line 15 minus line 5 of the Statement of Income that apply to direct business only (i.e., "excluding expenses related to reinsurance assumed or ceded").[118]

Calculation of Pretax Profit or Loss Excluding All Investment Gain (Column 33)

Column 33 provides pretax profit (loss) excluding all investment gains and is calculated from the information contained in the previous columns of Part III of the IEE, using the same formulaic approach as in Part II. Specifically,

Pretax profit or loss excluding all investment gains =

Premiums earned (column 3)
- Dividends to policyholders (column 5)
- Incurred loss (column 7)
- DCC expenses incurred (column 9)
- A&O expenses incurred (column 11)
- Commission and brokerage expenses incurred (column 23)
- Taxes, licenses and fees incurred (column 25)
- Other acquisitions, field supervision and collection expenses incurred (column 27)
- General expenses incurred (column 29)
+ Other income less other expenses (column 31).

INTERROGATORIES

The interrogatories to the IEE are actually shown before the Parts I through III. The interrogatories provide explanatory notes on the information contained in Parts I through III, the most important of which is Interrogatory 4, which provides information on the process by which the allocations of expenses and profit are made. Specifically, question 4 asks:

4. The information provided in the Insurance Expense Exhibit will be used by many persons to estimate the allocation of expenses and profit to the various lines of business.
   - 4.1 Are there any items requiring special comment or explanation?
   - 4.2 Are items allocated to line of business in Parts II and III using methods not defined in the instructions?
   - 4.3 If yes, explain.[119]

Questions 4.1 and 4.2 each require "yes" or "no" responses. If the company answers "yes" to either question, the company is required to provide an explanation, so the user can consider differences in the company's process relative to what is stated in the instructions.

[118] Ibid., page 422.
[119] 2011 IEE.

CHAPTER 19. RISK-BASED CAPITAL

OVERVIEW

The Risk-Based Capital (RBC) system was developed by the National Association of Insurance Commissioners (NAIC) and has been used since 1994 to provide a means for the early detection of insurance company insolvency. It was implemented for property/casualty companies in part in response to reports issued by the federal government in the late 1980s and early 1990s questioning the ability of state governments to regulate insurance companies.[120] These reports emerged in the wake of four of the largest property/casualty insurance company insolvencies in the history of the U.S. insurance industry: Mission Insurance Company, Transit Casualty Company, Integrity Insurance Company and Anglo-American Insurance Company.

The implementation of the RBC system was a significant advancement in solvency monitoring by state governments and has also served as the foundation for many other capital models that followed, including those currently used by rating agencies.

There are two main components to the RBC system:

1. RBC formula: The RBC formula results in a minimum level of required capital determined (the authorized control level benchmark, or ACL) formulaically using an approach that is standard to all insurance companies in a particular industry group (e.g., property/casualty, life and health). The minimum level of required capital is intended to reflect the capital need to support the risks faced by insurance companies. The company's recorded capital is compared to the minimum required capital to produce the RBC ratio.[121] The RBC ratio is compared to a range of values that define the levels of company and regulatory action.
2. RBC Model Act for Insurers:[122] The RBC Model Act, when adopted as law in each state, provides the state insurance regulator with authority to take specific action when a company's RBC ratio falls below certain thresholds.

The RBC system is applied to property/casualty, life and health insurance companies. Certain entities are exempt from the RBC system, including title insurance companies, monoline financial guaranty insurance companies and monoline mortgage guaranty insurance companies. Other exemptions may apply based on individual state rules. This publication will

[120] The most widely known of these reports was written by the U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce titled, "Failed Promises – Insurance Company Insolvencies" (see U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce. "Failed Promises-Insurance Company Insolvencies." 101 Cong., 2rid sess., February 1990. Washington, D.C.: GPO, 1993).
[121] The company's actual capital is adjusted to reflect certain items that will be introduced later in this chapter.
[122] NAIC RBC Model Act for Insurers (Model #312).

focus on the RBC system as it applies to property/casualty insurance companies. The formulas differ for property/casualty, life and health insurance companies, reflecting differing risk factors for each.

Insurance companies are required to file their RBC report with the NAIC by March 1 based on information evaluated as of the prior year-end (December 31). An insurance company's RBC report provides its RBC formula calculations and management discussion and analysis of the RBC results. The RBC report is confidential; therefore, details of the calculation are not available to the public. However, the summarized results of the RBC formula are shown in the Five-Year Historical Data exhibit of the Annual Statement, which is in the public domain.

RBC FORMULA

Overview

The RBC formula is computed by applying a set of factors to asset, reserve, recoverable and premium items reported in an insurance company's Annual Statement. The size of the factor depends on the level of risk associated with each item; the greater the risk, the greater the factor. The application of the factors to the associated Annual Statement items results in what are commonly referred to as "risk charges."

The formula is not a comprehensive measure of every risk for an insurance company; rather it only considers those risks that are material to an insurance company. Further, risks associated with a company's business plans and strategy, management, internal controls, systems, reserve adequacy and ability to access capital are not considered as these risks are difficult to quantify.

The general structure of the RBC formula has remained intact since it was first implemented in 1994. The RBC formula was developed based on its predecessor, the life RBC formula, which the NAIC implemented a year earlier in 1993.[123]

Risk Categories

The life RBC formula originally included four risk categories, each denoted by the letter "C" with a number subscript to identify the particular risk:

- C_1 Asset risk
- C_2 Insurance (or underwriting) risk
- C_3 Interest rate risk
- C_4 Business risk

The general definition of the major risk categorizations has remained the same since the life RBC formula was originally implemented:

[123] RBC for stand-alone health insurers was not implemented until 1998.

- Asset risk represents risks associated with an insurance company's investments and other recoverable-based assets (i.e., assets due to the insurance company). It considers the risk that a bond issuer will not make the required interest or principal repayments (i.e., default risk) or that the value of the asset will be substantially impaired due to changes in interest rates or financial market conditions.
- Insurance risk represents the risk associated with the issuance of insurance policies. It is analogous to underwriting risk in the property/casualty industry. It represents the risk that claims emerge greater than expected due to inadequate pricing or random variation.
- Interest rate risk represents the risk that interest rates will change and result in a mismatch between assets and liabilities.
- Business risk is intended to capture other risks inherent in an insurance company's operations. For life insurance companies, the business risk charge within RBC considers the risk of financial loss from litigation and guarantee fund assessments.[124] Both impact a life insurance company's expenses.

The property/casualty formula differs from the life formula in that interest rate risk and business risk are not included. Interest rate risk is more prevalent in life insurance because life insurance policies tend to be purchased as investment vehicles, whereas property/casualty products are purchased to protect the consumer from financial loss. As of December 31, 2011, the life insurance industry held more than 17 times the amount of recorded surplus in admitted assets whereas property/casualty insurers held less than three times the amount of surplus in admitted assets.

Further, while not explicitly included, certain aspects of business risk are inherently included within the underwriting risk charge for property/casualty insurers. These aspects include the impact of changes in operations on loss experience and the consideration of expenses.

Visually, the asset and underwriting risk charges of the property/casualty formula differ in that they denoted by the letter "R," instead of the letter "C" used for the life formula.

Asset Risk

Within the property/casualty RBC formula, there are currently four categories of asset risk:

R_0 Asset risk – Subsidiary insurance companies
R_1 Asset risk – Fixed income
R_2 Asset risk – Equity
R_3 Asset risk – Credit

[124] Letter from American Academy of Actuaries Joint Risk Based Capital Task Force to Lou Felice, Chair, NAIC Risk-Based Capital Task Force Re: Comparison of the NAIC Life, P&C and Health RBC Formulas, April 2001, http://www.actuary.org/pdf/finreport/RBC_0801.pdf, page 4.

R_0 through R_2 are risks associated with admitted invested assets, which are shown on lines 1 through 11, column 3, on the asset side of the statutory balance sheet (e.g., bonds, stocks, mortgage loans on page 2 of the Annual Statement). The R_0 charge considers default risk associated with investments in affiliated insurance companies. Note the life formula was modified from its original format to include asset risk associated with investments in affiliated insurance companies as C_0. The R_1 charge considers changes in interest rates and potential default of fixed income investments. The R_2 charge considers changes in asset valuations for non-fixed income investments (e.g., stocks, real estate).

R_3 considers the credit risk associated with receivables on the balance sheet, which include items listed on lines 12 and subsequent on the asset side of the balance sheet, as well as risk associated with reinsurance recoverables.

Underwriting Risk

There are two categories of underwriting risk in the property/casualty RBC formula:

R_4 Underwriting risk – Reserves
R_5 Underwriting risk – Net written premium

The reserve risk charge (R_4) is concerned with past business while the premium risk charge (R_5) is concerned with future business. Reserve risk is the risk that the company's recorded loss and loss adjustment expense (LAE) reserves will develop adversely, under the assumption that the current reserve balance is adequate. Written premium risk considers the risk that one year's worth of the company's future business will be unprofitable.

According to the NAIC RBC instructions, "Underwriting risk is the largest portion of the RBC charge for most property casualty insurance companies."[125] If we exclude the R_0 component, which does not represent true third-party asset risk, total asset risk is a smaller component of the formula than total underwriting risk. This contrasts with life insurance companies, where the predominant portion of the RBC charge is asset risk.

Approximately 60% of the admitted assets of the property/casualty insurance industry were in bonds, with the next largest investment category dropping to 15% in preferred (1%) and common (14%) stocks.[126] Property/casualty insurance companies tend to concentrate in short-term, relatively fixed and liquid investment categories given the short duration of most property/casualty insurance products sold and the need to have funds readily available to pay claims. The smaller volume and relatively short-term nature of the assets for property/casualty insurance companies significantly limits the asset risk compared to life insurance companies.

[125] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 19.
[126] 2011 SNL Financial LC.

Covariance Adjustment

Risk charges R_0 through R_5 are aggregated in the RBC formula to calculate the overall RBC need as follows:

$$RBC = R_0 + \sqrt{R_1^2 + R_2^2 + R_3^2 + R_4^2 + R_5^2}.$$

The square root calculation within the RBC formula is commonly referred to as the "covariance adjustment." Rather than summing up the individual risk charges (R_1 through R_5), it is assumed that the individual risk charge categories are independent of one another. That is, the formula reflects diversification among these risk categories, thereby assuming that the aggregate risk is less than the sum of risk of the independent components. This is considered to be a reasonable assumption. For example, the risk of default on an insurance company's invested assets (e.g., bonds, stocks) is independent of the performance of its loss reserves. Taking the square root of the sum of the squares for R_1 through R_5 increases the dependency of the larger risks in the calculation and decreases the significance of the smaller risk categories in the overall aggregate RBC requirement.

R_0 is kept outside of the covariance adjustment because the risk for investments in insurance company subsidiaries is believed to be directly correlated with the combination of the risks specific to the reporting entity (i.e., the other risk charges R_1 through R_5). Therefore, the risk for investments in insurance company subsidiaries is additive to the aggregate of the investment and underwriting risks of the reporting entity for which RBC is being calculated. Stated differently, RBC should not depend on organizational structure of the insurance company; investments in insurance subsidiaries that are subject to RBC do not provide diversification benefit.

The covariance calculation is applied in the life formula and the property/casualty formula, keeping C_0 outside of the square root like R_0.

For illustrative purposes, Table 75 assumes the following charges for a property/casualty insurance company (in USD):

TABLE 75

R_0	2,112,000
R_1	5,087,000
R_2	6,976,000
R_3	4,112,000
R_4	18,936,000
R_5	10,793,000
Sum	48,016,000

As shown in Table 75, the sum of the RBC charges is $48,016,000 (total RBC before covariance). After covariance, total RBC is $25,913,505. RBC after covariance is considerably less, reflecting independence of the risks associated with R_1 through R_5.

Components of the Charges

Within subsequent sections of this chapter, we will walk through the components of each charge that goes into the RBC formula, deliberately leaving out certain information that would be necessary to prepare and issue the RBC report for a company. The NAIC issues instructions on how to compute RBC, including an instructional CD-ROM providing a spreadsheet with the necessary formulas. Additionally, RBC software is available from Annual Statement software vendors and is used by insurance companies for filing with state regulatory authorities. This publication is only intended to provide an overview of the RBC formula and is not intended to supplant the NAIC instructions or electronic filing requirements.

Before we delve into the details, let us provide some perspective on the relevance of each risk category to the overall formula. Table 76 provides a summarization of a table provided by the NAIC in its presentation of 2011 RBC results for the property/casualty insurance industry:[127]

TABLE 76

Aggregate for 2,600 Property/Casualty Companies RBC by Category USD in 000s	
2011 Risk Category	Totals
R_0 – Asset Risk – Affiliates	45,083,423
R_1 – Asset Risk – Fixed Income	7,941,632
R_2 – Asset Risk – Equity	74,325,097
R_3 – Asset Risk – Credit	15,514,367
R_4 – Underwriting Risk – Reserves	102,176,645
R_5 – Underwriting Risk – Written Premiums	55,754,469
Total RBC before Covariance	300,795,633

Underwriting risk associated with loss and LAE reserves (R_4) represented the largest risk charge within the RBC formula for the property/casualty insurance industry in 2011 ($102 billion).

Recall that the covariance adjustment increases the dependency of the larger risks and decreases the significance of the smaller risk categories in the overall aggregate RBC requirement. As displayed in the Table 77, squaring each of charges R_1 through R_5 and

[127] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

summing the results shows that the underwriting risk charges contributed 70% of the total charge associated with R_1 through R_5 in 2011. The asset risk charge associated with equity investments essentially comprised the remainder (29%).[128]

TABLE 77

Aggregate for 2,600 Property/Casualty Companies RBC by Category USD in 000s			
2011 Risk Charges for R_1 through R_5	Totals	Squared Totals	Distribution
R_1 – Asset Risk – Fixed Income	7,941,632	63,069,518,823,424	0%
R_2 – Asset Risk – Equity	74,325,097	5,524,220,044,059,410	29%
R_3 – Asset Risk – Credit	15,514,367	240,695,583,410,689	1%
R_4 – Underwriting Risk – Reserves	102,176,645	10,440,066,783,456,000	54%
R_5 – Underwriting Risk – Written Premiums	55,754,469	3,108,560,813,471,960	16%
Total RBC before Covariance	255,712,210	19,376,612,743,221,500	100%

Despite representing more than half of the invested assets of the property/casualty insurance industry in 2011 (see Table 2), the asset risk charge for fixed income investments had almost no impact (0%) on the overall RBC charge for the industry. This is because property/casualty insurers tend to invest in relatively safe, high-credit quality bonds.

The asset risk charge for equity is relatively high (29%), reflecting the increased risk associated with these investments over fixed income. As shown in Table 2, common stocks represented 14% of total assets held by property/casualty insurers in 2011.

The charge for credit risk is relatively low. As we shall see, this is probably due to the fact that this charge is applied to reinsurance recoverables after consideration of the provision for reinsurance to avoid double counting.

Note that the NAIC's report on 2011 results also shows that the relative significance of each risk charge to the overall formula has remained relatively consistent over the past five years.

THE RBC CHARGE FOR ASSET RISK ASSOCIATED WITH INSURANCE COMPANY SUBSIDIARIES (R_0)

The RBC required for investments in insurance company subsidiaries depends on the asset class and type of subsidiary and whether the subsidiary is subject to RBC. Recall that certain insurance companies are not subject to RBC, such as title insurers, monoline mortgage guaranty insurers and monoline financial guaranty insurers. R_0 considers only those investments in insurance company subsidiaries for which the subsidiary itself files RBC. For

[128] Ibid.

these entities the *total* R_0 charge across all common stocks, preferred stocks and bond investments in a particular subsidiary is *limited to* the RBC of the subsidiary, adjusted by the reporting entity's ownership (pro rata) share in the subsidiary. The theory is that, through ownership, the reporting entity is subject to the same risks as its subsidiary.

The charge for investments in insurance subsidiaries that are *not* subject to RBC (excluding alien insurers,[129] which are considered in R_0) is included in R_1 or R_2, depending on whether the investment is fixed income or equity based. The R_1 or R_2 categories also include charges for investments in upstream affiliates, including parent and holding companies. This distinction is important because of the placement of R_0, R_1 and R_2 in the RBC formula. As noted, investments in insurance subsidiaries that are subject to RBC are assumed to be correlated with those of the reporting entity and therefore outside of the square root in the formula.

Term definitions will become important as we walk through the asset risk charges. Statutory Accounting Principles (SAP), specifically Statement of Statutory Accounting Principles (SSAP) No. 88, Investments in Subsidiary, Controlled, and Affiliated Entities, define these terms as follows:

Parent — "An entity that directly or indirectly owns and controls the reporting entity."[130]

Subsidiary — "An entity that is, directly or indirectly, owned and controlled by the reporting entity."[131]

Affiliate — "An entity that is within the holding company system or a party that directly or indirectly, through one or more intermediaries, controls, is controlled by, or is under common control with the reporting entity. An affiliate includes a parent or subsidiary and may also include partnerships, joint ventures, and limited liability companies. …"[132]

Control — "The possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of the investee, whether through the (a) ownership of voting securities, (b) by contract other than a commercial contract for goods or non-management services, (c) by common management, or (d) otherwise. Control shall be presumed to exist if a reporting entity and its

[129] According to the Glossary of Terms in the textbook *Property-Casualty Insurance Accounting* issued by Insurance Accounting & Systems Association, Inc., 8th ed. (2003), First Addendum (2006), an alien insurance company is defined as "An insurer or reinsurer domiciled outside the U.S. but conducting an insurance or reinsurance business in the U.S."

[130] SSAP No. 88, Investments in Subsidiary, Controlled and Affiliated Entities, A Replacement to SSAP No. 46, "Definitions" section.

[131] Ibid.

[132] Ibid.

> affiliates, directly or indirectly, own, control, hold with the power to vote, or hold proxies representing 10% or more of the voting interests of the entity."[133]

SSAP No. 88 further states that control is measured at the holding company level. For example, the 10% benchmark would apply to a group consisting of two affiliates where one affiliate owns 7% of a company and the other affiliate owns 4% of that same company. Each member of the group has control over the company as the sum of their ownership percentages exceeds 10%.

An insurance company's investment in subsidiaries, both controlled and affiliated entities (SCAs), are assets.

R_0 measures the risk associated with subsidiary insurance companies based on the following:

1. Common stock, preferred stock and bond investments in an insurance company subsidiary, when the insurance company subsidiary is also subject to RBC filing requirements
2. Investments in alien insurance company affiliates
3. Off-balance sheet or other items

To provide some perspective, Table 78 highlights the relevance of the above items to the R_0 charge based on the NAIC's compilation of the RBC results for the industry in 2011:[134]

TABLE 78

Aggregate for 2,600 Property/Casualty Companies R_0 Component of 2011 RBC USD in 000s		
R_0 – Asset Risk – Affiliates	**Totals**	**Distribution**
1. Common stock, preferred stock and bond investments	38,363,845	85%
2. Investments in alien insurance companies	4,940,746	11%
3. Off-balance sheet or other items	1,778,832	4%
Total R_0	45,083,423	100%

Common stock, preferred stock and bond investments in affiliated entities subject to RBC was the largest contributor to the R_0 risk charge for the industry in 2011 (85%), followed by investments in alien insurance companies (11%) and off-balance sheet items (4%).

[133] Ibid.
[134] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

We will discuss each of the components of the R_0, placing emphasis in our discussion on the calculation associated with common stock, preferred stock and bond investments due to their significance to R_0.

Insurance Subsidiaries Subject to RBC – Ownership in Common Stock

According to the NAIC's 2011 written instructions for RBC[135], the RBC charge for investments in common stock of an insurance company subsidiary depends on the accounting method used by the reporting entity to report the investment: the market valuation approach or the equity method.[136]

If the market valuation approach is used by the reporting entity to accounting for its investment in the insurance company SCA, the R_0 charge for ownership of common stock of the subsidiary is the *minimum* of the following:

- Total RBC of the affiliate, after covariance adjustment, multiplied by the percentage of ownership in the common stock
- The statutory surplus of the affiliate, multiplied by the percentage of ownership in the common stock

In these cases, there is also an R_2 charge in addition to the R_0 component which considers the book/adjusted carrying value of the affiliated's stock relative to RBC and policyholders surplus.

If the equity method is used, the R_0 charge for ownership of common stock in the insurance affiliate subject to RBC is equal to the *minimum* of the following:

- Total RBC of the affiliate, after covariance adjustment, multiplied by the percentage of ownership in the common stock
- The book/adjusted carrying value of the common stock (greater than 0) as recorded by the reporting entity (no adjustment for the percentage ownership)

We note that there is an inconsistency between the NAIC's written instructions and the formulas contained in the spreadsheet contained in the corresponding CD-ROM. The formula in the spreadsheet does not differentiate between the equity method and market valuation

[135] NAIC *RBC Property & Casualty 2011 Forecasting & Instructions,* page 1.

[136] According to SAP (SSAP No. 88), admitted investments in insurance company SCAs are recorded on the reporting entity's balance sheet using one of two methods: the market valuation approach or equity method. Under the market valuation approach, investments in insurance company SCAs are based on the market value of the SCA, adjusted for the reporting entity's ownership percentage. Market value is equivalent to fair value. Under the equity method, investments in insurance company SCAs are recorded based on the reporting entity's proportionate share of audited statutory equity of the SCA's balance sheet, adjusted for any unamortized goodwill. Under this method, the reporting entity records the initial investment at cost then essentially adjusts the value over time based on the reporting entity's share in the company's income (loss). At any point in time, the recorded amount is called the "carrying value."

approach in calculating R_0 for common stock investments in insurance affiliates subject to RBC. Rather, the spreadsheet computes the R_0 charge equal to the minimum of RBC of the affiliate and the book/adjusted carrying value of the stock; the affiliate's statutory surplus does not enter the equation. The NAIC has acknowledged the inconsistency between the written instructions and the spreadsheet and expects to research and resolve the issue by the end of 2013. We will update this publication when this issue is resolved and provide examples to illustrate the calculation of R_0 at that time.

Despite the inconsistency, we note that R_0 for ownership of common stock in an insurance affiliated cannot be greater than the RBC of the affiliate (after covariance adjustment and adjusted for the reporting entity's ownership share of the affiliate's outstanding common stock). Recall that RBC calculations are not in the public domain. Attempts to recalculate an insurance company's RBC often make a simplifying assumption that the R_0 charge for ownership in common stock of an SCA is equal to the SCA's RBC (adjusted for covariance and ownership).

Insurance Subsidiaries Subject to RBC — Ownership of Preferred Stock

The reporting entity's R_0 charge for investments in preferred stock of insurance subsidiaries depends on whether the subsidiary has excess RBC. Excess RBC is defined as the amount of RBC, after covariance adjustment, that exceeds the total value of the outstanding common stock. If the excess RBC is greater than zero, the RBC charge for ownership in preferred stock is the *minimum* of the following:

- The pro rata share of the excess RBC
- The book/adjusted carrying value of the preferred stock (greater than zero) as recorded by the reporting entity

The pro rata share is equal to the percentage of the affiliate's total outstanding preferred stock value that is owned by the company.

If the excess RBC is less than or equal to zero, then the RBC charge for the company's ownership in the preferred stock of its affiliate is zero.

Insurance Subsidiaries Subject to RBC — Ownership of Bonds

Similarly, for insurance subsidiaries subject to RBC, the reporting entity's R_0 charge for bond investments depends on whether there is excess RBC over the amount of the total value of subsidiary's outstanding common and preferred stock. If the excess RBC over the value of common and preferred stocks is greater than zero, the RBC charge for ownership in bonds is the *minimum* of the following:

- The pro rata share of the excess RBC

- The book/adjusted carrying value of the bonds (greater than zero) as recorded by the reporting entity

The pro rata share is equal to the percentage of the affiliate's total outstanding bond value that is owned by the company.

Investments in Alien Insurance Affiliates

An alien insurance company is a company that is incorporated under the laws of a country outside the U.S. Therefore, these entities are not themselves subject to RBC. The reporting entity's RBC charge for investments in directly owned alien affiliates is equal to the book/adjusted carrying value of the company's interest in the affiliate multiplied by a set factor of 0.500.

For those alien insurance affiliates that are indirectly owned by the company, the RBC charge is equal to the carrying value of the holding company's interest in the affiliate multiplied by 0.500 and adjusted to reflect the reporting entity's ownership on the holding company.

The 0.500 was originally established based on the average RBC charge for U.S. insurance company affiliates.[137]

Off-balance Sheet and Other Items

Off-balance sheet and other items include amounts that are not recorded by the insurance company in its statutory financial statements yet still represent assets and/or potential liabilities of the insurance company and therefore expose the company to risk. Off-balance sheet and other items are disclosed in the Notes to Financial Statements and General Interrogatories of the Annual Statement. There are three categories of such items included in the R_0 charge:

1. Non-controlled assets: This category of assets includes the following:
    - Collateral loaned to others from securities lending programs
    - Assets that are reported on the company's balance sheet but for which the company does not have exclusive control over, thereby exposing the company to increased investment risk
    - Assets sold or transferred that are subject to a put option, thereby enabling the purchaser to sell the assets back to the insurance company

2. Contingent liabilities: This includes amounts for which the insurance company may be held responsible but for which the amount cannot be determined and therefore is not entered on the balance sheet. An example includes structured settlements for which the insurance company purchases an annuity from a life insurance company to make

[137] NAIC *RBC Property & Casualty 2011 Forecasting & Instructions,* page 19.

structured payments to claimants in order to close out a claim. The insurance carrier would close the claim since it paid the life insurer to make the claim payments on its behalf. However, if the life insurance company fails to pay, the insurance company would still be ultimately responsible for settling the liability. This is a contingent liability to the insurance company.

3. Guarantees for the benefit of affiliates: These are guarantees that may expose the company's assets to contingent liability exposure. An example would be a guarantee made by a company to pay an outstanding loan held by an affiliate with a third party in the event that the affiliate was unable to meet its obligation to that third party.

With the exception of conforming securities lending programs,[138] which are those programs that have specified elements that lower the associated risk, a 1% factor, selected judgmentally by the NAIC, is applied to all off-balance sheet items for purposes of inclusion in the R_0 charge. Conforming securities lending programs have a charge of 0.2%.

THE RBC CHARGE FOR ASSET RISK ASSOCIATED WITH FIXED INCOME INVESTMENTS (R_1)

R_1 includes the charge for interest rate and default risk associated with fixed income investments in the following categories:

1. Holding company
2. Upstream affiliate (i.e., parent company)
3. Insurance subsidiaries that are not subject to RBC (other than alien insurers)
4. Investment affiliate
5. Other non-insurance subsidiaries
6. Unaffiliated bonds
7. Mortgage loans
8. Miscellaneous assets, including cash, cash equivalents, other short-term investments and nonadmitted collateral loans
9. Replication (synthetic asset) transactions and mandatorily convertible securities
10. Off-balance sheet collateral and Schedule DL, Part 1, Assets

In general, the charge for these investments is based on a factor determined by the NAIC multiplied by the book/adjusted carrying value of the investment. The same factor is used by all companies.

[138] According to the NAIC *RBC Property & Casualty 2011 Forecasting & Instructions*, page 16, conforming securities lending programs are those comprising all of the following: (1) a written plan approved by the company's board of directors describing the company's securities lending program and ways it can invest collateral; (2) written procedures that the company must follow to monitor and control the risks of the program; (3) a binding agreement between the insurance company and the borrowers of the insurer's securities; and (4) collateral in the form of investments that are allowable by the company's domiciliary state (e.g., cash, cash equivalents, federally guaranteed investments).

In addition to the charge for the aforementioned types of fixed income investment categories, there are two charges reflecting the level of diversification in the entity's fixed income portfolio. The first is the bond size factor, and the second is the asset concentration factor. The fewer the bond holdings and greater the concentration in individual issuers or borrowers, the greater the associated charge. These factors are discussed in further detail in this chapter's sections titled, "Unaffiliated Bonds and the Bond Size Factor" and "Asset Concentration Factor."

Table 82[139] highlights the relevance of the above items to the R_1 charge based on the NAIC's compilation of the RBC results for the industry in 2011: [140]

TABLE 82

Aggregate for 2,600 Property/Casualty Companies R_1 Component of 2011 RBC USD in 000s		
R_1 – Asset Risk – Fixed Income	Totals	Distribution
1. Holding company	1,858	0%
2. Upstream affiliate (parent company)	36,587	0%
3. Insurance subsidiaries not subject to RBC	-	0%
4. Investment affiliate	13	0%
5. Other non-insurance subsidiaries	1,260,343	16%
6. Unaffiliated bonds	4,088,852	51%
7. Mortgage Loans	248,169	3%
8. Miscellaneous assets	221,006	3%
9. Replication(synthetic asset) transactions and mandatorily convertible securities	37,717	0%
10. Off-balance sheet collateral and Schedule DL, Part 1, Asset	*Not separately provided*	0%
11. Bond size factor	1,458,498	18%
12. Asset Concentration (Fixed)	588,589	7%
Total R_1	**7,941,632**	**100%**

Investments in bonds of unaffiliated entities represented over half the risk charge within the R_1 category for the industry in 2011. The associated charge for bond size and the charge for fixed income investments in other non-insurance subsidiaries comprised the majority of the remainder of the R_1 charge.

[139] Note Tables 79, 80 and 81 have been omitted from this version of our publication. They serve as placeholders to illustrate the R0 calculation and will be included when the NAIC resolves the inconsistency between the written instructions to RBC and the NAIC spreadsheet.

[140] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

A brief discussion of each charge is provided below, with examples to illustrate their calculation as deemed appropriate.

Holding Company

For investment in a holding company, the RBC charge is 0.225 times the holding company value in excess of the carrying value (i.e., holding company value minus carrying value) for indirectly owned insurance affiliates calculated in R_0.

Upstream Affiliate (i.e., Parent Company)

For bond investments in a parent company, the RBC charge is 0.225 times the carrying value of the bonds of the parent, regardless of whether the parent is subject to RBC.

Insurance Subsidiaries Not Subject to RBC[141]

For bond investments in life, property/casualty and health insurance companies that are not subject to RBC, the charge is equal to 0.225 times the book/adjusted carrying value of the bonds.

Investment Affiliates

According to the NAIC RBC instructions, "An investment affiliate is an affiliate that exists only to invest the funds of the parent company. The term investment affiliate is strictly defined in the Annual Statement instructions as any affiliate, other than a holding company, engaged or organized primarily to engage in the ownership and management of investments for the insurer. An investment affiliate shall not include any broker-dealer or a money management fund managing funds other than those of the parent company."[142]

The RBC charge for an investment affiliate is essentially the same as it would be if the reporting entity held the assets directly. For example, if the reporting entity owned a subsidiary that managed $1 billion of its investments in common stock, then the RBC charge for that entity would be computed based on the $1 billion stock portfolio. If the charge for the stock investment were $10 million if the reporting entity owned the stock directly, then the charge for the investment affiliate would be $10 million. If the entity only owned 60% of the investment affiliate, then the RBC charge would be $6 million (= 0.6 * $10 million).

Note that the calculation follows the same process as that for common stock, preferred stock and bond investments in insurance subsidiaries in R_0. That is, there is an RBC charge for preferred stocks and bonds only if the excess RBC of the affiliate exceeds the carrying value of common stocks (plus preferreds in the case of bonds).

[141] Other than alien insurers, which are addressed in R_0.
[142] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 5.

Other Non-insurance Subsidiaries

Unless the RBC charge for a particular type of non-insurance subsidiary is addressed separately within this chapter (e.g., the charge for investment affiliates), the RBC charge for bond investments in a non-insurance subsidiary is 0.225 times the book/adjusted carrying value of the bonds.

Unaffiliated Bonds and the Bond Size Factor

The RBC charge for unaffiliated bond investments is equal to the book/adjusted carrying value of the bond multiplied by a factor, where the factors vary based on the bond class. The factors are as shown in Table 83.

TABLE 83

NAIC bond class	RBC factor
Class 01 – Highest credit quality	
U.S. government, guaranteed by U.S. government	0.000
U.S. government, not backed by full faith and credit of U.S. government	0.003
All other	0.003
Class 02 – High credit quality	0.010
Class 03 – Medium credit quality	0.020
Class 04 – Low credit quality	0.045
Class 05 – Lowest credit quality	0.100
Class 06 – In or near default	0.300

As displayed in Table 83, the RBC factors increase with amount of perceived credit risk, starting with 0.000 for U.S. government bonds that are backed by the full faith and credit of the government and therefore have almost no default risk, all the way to a factor of 0.300 for bonds issued by companies that are in or near default. According to the NAIC instructions for RBC, the bond factors are determined "based on cash flow modeling using historically adjusted default rates for each bond category." The instructions further explain: "For each of 2,000 trials, annual economic conditions were generated for the 10-year modeling period. Each bond of a 400-bond portfolio was annually tested for default (based on a "roll of the dice") where the default probability varies by rating category and that year's economic conditions."[143]

In addition to the charge for each class of bond, there is a separate charge to reflect the level of diversification called the bond size factor. According to the NAIC instructions, "The size factor reflects additional modeling for different size portfolios that shows the risk increases as the number of bond issuers decreases. Because most insurers' bond portfolios are considerably smaller than the portfolio used to develop the model bond risk, the basic bond factors understate the true default risk of these assets. The bond size factor adjusts the

[143] Ibid., page 8.

computed RBC for those bonds that are subject to the size factor to more accurately reflect the risk."[144]

The bond size adjustment factor, which measures the degree of diversification in the investment portfolio, is computed as the weighted average number of issuers in a portfolio subject to the adjustment, with the weights prescribed by the NAIC depending on the number of issuers. Table 84 displays the formula, including the NAIC weights.

TABLE 84

Bond Size Adjustment Factor			
	# of bond issuers (1)	Weights (2)	Weighted # Issuers (3) = (1) * (2)
First 50	XXXX	2.5	
Next 50	XXXX	1.3	
Next 300	XXXX	1.0	
More than 400	XXXX	0.9	
Total	XXXX		

The bond size factor is equal to the total in column 3 divided by the total in column 1 in Table 84, minus 1. For example, if a reporting entity invests in 500 bonds, the bond size adjustment factor would be 0.2. The calculation of this factor is provided in Table 85 as the sum of the weighted number of issuers in column 3 of 580 divided by the total number of issuers in column 1 of 500, minus 1.

TABLE 85

Example of Bond Size Adjustment Factor			
	# of bond issuers (1)	Weights (2)	Weighted # Issuers (3) = (1) * (2)
First 50	50	2.5	125
Next 50	50	1.3	65
Next 300	300	1.0	300
More than 400	100	0.9	90
Total	500	1.2	580

[144] Ibid.

The bond size factor is applied to the RBC calculated for bonds subject to adjustment. As displayed in Table 85, the weights decrease with the number of issuers. Therefore, the more issuers, the lower the factor applied to the RBC and the lower the additional RBC amount required. For a reporting entity investing in fewer than 50 bonds, the factor is 1.5 times the RBC required for the bonds (=2.5 – 1); for an entity investing in 1,000 bonds, the factor is 0.03.[145]

The bond size factor only applies to portfolios having fewer than 1,300 bonds; the bond size factor for portfolios having 1,300 or more bonds is zero.

Bonds that are subject to the bond size adjustment factor include unaffiliated bonds in classes 02 through 06, plus non-U.S. government bonds in class 01.

Mortgage Loans

The RBC charge for mortgage loans is computed as the book/adjusted carrying value of the loans multiplied by a factor of 0.050.

Miscellaneous Assets

The RBC charge for miscellaneous assets is computed as a factor times the book/adjusted carrying value for those assets that are in excess of amounts considered elsewhere in the RBC formula, if any. The RBC charges for each investment are as follows:

- 0.003 times the book value of cash, net cash equivalents and other short-term investments
- 0.050 times admitted collateral loans

Replication (Synthetic Asset) Transactions and Mandatorily Convertible Securities

Assets included within this category are defined in the RBC instructions as follows:

"A replication (synthetic asset) transaction is a derivative transaction entered into in conjunction with other investments in order to reproduce the investment characteristics of otherwise permissible investments…

[A] mandatorily convertible security is a security that is mandatorily convertible at prices different from the market prices at the time of conversion. Such securities are classified on the Annual Statement by ignoring the conversion feature." [146]

To expand upon the discussion about derivatives in *Chapter 8. The Statutory Income Statement: Income and Changes to Surplus* and *Chapter 13. Overview of Schedules and Their Purpose*, insurance companies use derivative transactions for one of three reasons:

[145] 0.03 = [[(50*2.5) + (50*1.3) + (300*1.0) + (600*0.9)] / (1,000)] – 1.0

[146] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 10.

1. Hedge or mitigate risk
2. Generate income
3. Replicate an asset that cannot be purchased in the cash market because it is either too expensive or unavailable[147]

As stated previously, derivative holdings by property/casualty insurers are small relative to those held by life insurance companies. In 2011, life insurance companies held 96% of the industry's derivatives, whereas property/casualty insurance companies only held 4%. And only 3% ($1.8 billion) of the total notional amount of derivatives held by property/casualty insurers ($56.0 billion) was for replication purposes.[148] This somewhat explains the low-risk charge for this category.

Replication (synthetic asset) transactions are commonly referred to as "RSATs" and are reported in Schedule DB of the Annual Statement. An RSAT is a package of a derivative(s) and a cash instrument(s). The cash instrument is generally a bond.

The RBC charge for RSATs is equal to the RBC factor applicable for the asset the RSAT is replicating, multiplied by the statement value of the transaction from Schedule DB. Credit is given for the RBC charge already applied to the cash instrument. For example, if the cash instrument is a bond, then cash component of the RSAT is recorded as a bond on the company's balance sheet and has already received a risk charge based on its bond characterization. The RBC for RSATs is adjusted to remove the RBC previously calculated for the subject bond.

A mandatorily convertible security is reported in the Annual Statement schedule that corresponds to the security pre-conversion. For example, assume an insurer holds a bond that is mandatorily convertible into a fixed number of shares of common stock within three years. The bond will be reported in the company's balance sheet and will therefore receive a RBC charge based on its NAIC bond class. However, the insurer is not only exposed to risks associated with the bond, but also the risk associated with the common stock that it will convert to sometime over the next three years, since the bond's principal will be used to purchase the shares. The RBC charge for mandatorily convertible securities adjusts the RBC charge upward if the security that results from conversion is more risky. Since unaffiliated common stocks have a RBC charge of 0.15, and bonds have a charge between 0 and 0.3, depending on class, the RBC charge will be adjusted upward by the maximum of the difference between the RBC charge for the stock and bond, and zero. This is similar to the application of the RBC charge for RSATs; the RBC charge for mandatorily convertible securities is equal to

[147] Memorandum to NAIC Investment Risk Based Capital (RBC) Working Group from Walter Givier – Northwestern Mutual Life, Mark Anderson – Met Life and other members of the ACLI Derivative Risk Management Team, dated March 29, 2013, Re: Life Insurer RBC for Derivatives.
http://www.naic.org/documents/committees_e_capad_investment_rbc_wg_exposures_derivatives.pdf

[148] NAIC & The Center for Insurance Policy and Research, Capital Markets Special Report, "An Update of the Insurance Industry's Derivative Exposure," page 2 of 8, http://www.naic.org/capital_markets_archive/130109.htm.

the RBC charge for the converted security, reduced by the RBC charge for the original security.

Half of the charge for RSATs and mandatorily convertible securities is applied to R_1, with the remaining half applied to R_2. This assumes that half of the securities in the calculation are fixed income and half are equity.

Off-balance Sheet Collateral and Schedule DL, Part 1, Assets

The RBC charge for off-balance sheet collateral and Schedule DL assets considers the risk associated with securities lending programs. Recall the discussion of securities lending programs in *Chapter 13. Overview of Schedules and Their Purpose*. The risk associated with these programs is that the reporting entity will lose money on the reinvestment of collateral posted by the borrower. Collateral held by the reporting entity in conjunction with securities lending programs is reported one of three ways in the Annual Statement:

1. In investment schedules that correspond to the invested collateral (e.g., Schedule A, B, BA, D, DA and E), which roll up into the balance sheet
2. In Schedule DL, Part 1, of the Annual Statement, which rolls into line 10 of the asset side of the balance sheet
3. Off-balance sheet, due to not being recorded in the financial statements

The R_1 charge considered herein includes a provision for these assets as included in items 2 and 3 above. The charge is equal to the book/adjusted carrying value multiplied by a factor, where the factor is equal to that for the particular asset class. For example, the same bond factors by class applicable to unaffiliated bonds are also used in this calculation.

Asset Concentration Factor

The asset concentration factor doubles the RBC charge for the 10 largest issuers that the insurance company is exposed to. The purpose of this charge is to reflect the increased risk associated with large concentrations in single issuers.

The 10 largest issuers are determined by first summing the insurer's total investment (book/adjusted carrying value) across all investments (fixed income plus equity) for each issuer. The total amounts for each issuer are then sorted from largest to smallest to determine the top 10. The RBC charge for each fixed income and equity asset is computed for the 10 largest issuers. The resulting RBC charge for fixed income is included as the asset concentration RBC within R_1; the charge for equity is included as the asset concentration RBC

within R_2.[149] The RBC charge is limited to a maximum of 0.300 for each fixed income and/or equity investment.

Not all assets are subject to the asset concentration factor, as certain assets are deemed to be of low risk or have already received the maximum charge of 0.300. The assets excluded from the additional charge are also excluded in determining the 10 largest issuers.

Fixed income assets that are subject to the asset concentration factor include the 10 largest investments in each of the following:

- Unaffiliated bonds in classes 02 through 05[150]
- Collateral loans
- Mortgage loans

R_2 assets that are subject to the asset concentration factor include following:

- Unaffiliated preferred stocks and hybrid securities in classes 02 through 05
- Unaffiliated common stock
- Investment in real estate
- Encumbrances on invested real estate
- Schedule BA assets (excluding collateral loans)
- Receivable for securities
- Aggregate write-ins for invested assets
- Derivatives

The following provides a simplified example to illustrate the calculation of the asset concentration factor.

Assume that the fixed income and equity investments made by an insurance company that are subject to the asset concentration factor are limited to 15 issuers and investments in these issuers are limited to the assets listed in the Table 86 below. The following provides the total adjusted book/carrying value of these investments sorted from highest to lowest value by issuer[151].

[149] The asset concentration *factor* can be computed as the weighted average of the total asset concentration RBC charge with the total subject assets.
[150] Unaffiliated bonds in class 01 are excluded because they are deemed to be of low risk; unaffiliated bonds in class 06 are excluded because they already receive the maximum charge of 0.300.
[151] Note, for simplicity, only certain assets were included in the example.

TABLE 86

Example
Adjusted Book/Carrying Value for Assets Subject to Asset Concentration USD 000

		Fixed Income Assets		Equity Assets			
	Issuer Name	Unaffiliated Bonds Class 2 - 5	Collateral Loans	Unaffiliated Preferred Stocks Class 2 - 5	Unaffiliated Common Stock	Investment Real Estate	Total Assets Subject to Asset Concentration
1	Asppill Drug				1,200		1,200
2	Deal Mart		1,000				1,000
3	U.S. Express	1,000					1,000
4	MacroHard Inc.	900					900
5	Dill Computing			900			900
6	Tropical Beverage Co.	820					820
7	Popsi Co.			800			800
8	Texas Oil Inc.	550					550
9	Westwood Resorts		200			35	235
10	Dakota Energy	220					220
11	Bear Pharmaceuticals				200		200
12	Mediapro	200					200
13	Pear Computer				100		100
14	Jane Moose	80					80
15	KO Media				25	50	75
Total		3,770	1,200	1,700	1,525	85	8,280

Only the first ten of these issuers (Asppill Drug through Dakota Energy) are considered in the calculation of the asset concentration factor. The asset concentration charge is computed by multiplying the RBC charge for each asset class by the associated RBC factor for that class. For simplicity, assume that each of the bond investments is class 2 and each of the preferred stock investments is class 3. Table 87 provides the calculation of the asset concentration RBC within R_1 and R_2.

TABLE 87

Example
Calculation of Asset Concentration RBC

Fixed Income Assets	Book/Adjusted Carrying Value	Factor	Additional RBC
Class 2 Unaffiliated Bonds	3,490	0.010	35
Class 3 Unaffiliated Bonds	-	0.020	-
Class 4 Unaffiliated Bonds	-	0.045	-
Class 5 Unaffiliated Bonds	-	0.100	-
Collateral Loans	1,200	0.050	60
Mortgage Loans	-	0.050	-
Subtotal Fixed Income	4,690	0.020	95
Equity Assets	**Book/Adjusted Carrying Value**	**Factor**	**Additional RBC**
Class 2 Unaffiliated Preferred Stock	-	0.010	-
Class 3 Unaffiliated Preferred Stock	1,700	0.020	34
Class 4 Unaffiliated Preferred Stock	-	0.045	-
Class 5 Unaffiliated Preferred Stock	-	0.100	-
Class 2 Unaffiliated Hybrid Securities	-	0.010	-
Class 3 Unaffiliated Hybrid Securities	-	0.020	-
Class 4 Unaffiliated Hybrid Securities	-	0.045	-
Class 5 Unaffiliated Hybrid Securities	-	0.100	-
Unaffiliated Common Stock	1,200	0.150	180
Investment Real Estate	35	0.100	4
Encumbrance on Investment Real Estate	-	0.100	-
Schedule BA Assets	-	0.050	-
Receivable for Securities	-	0.050	-
Aggregate Write-Ins for Invested Assets	-	0.050	-
Derivatives	-	0.050	-
Subtotal Equity	2,935	0.074	218
Grand Total Asset Concentration			312

The asset concentration for fixed income investments within R_1 is $95,000 and the asset concentration for equity within R_2 is $218,000, resulting in a total asset concentration RBC of $312,000.

R_1 for Fictitious

To further illustrate the R_1 through R_5 charges, we used the Annual Statement for Fictitious Insurance Company to build a full example of the NAIC calculations[152]. Because Schedule D is

[152] Note that Fictitious Insurance Company does not have any affiliated entities. Therefore the R_0 charge is zero for Fictitious.

not included in the Annual Statement for Fictitious, we had to make assumptions in preparing the calculation, such as the distribution of fixed assets by RBC class. Table 88 provides the R_1 portion of the calculation for Fictitious.

TABLE 88

R_1 Charge for Fictitious Insurance Company NAIC Risk-Based Capital 2011			
R_1 Calculation — Fixed Income Assets	Amount Held	Charge Factor	RBC Charge
Cash and Cash Equivalents	154,000	0.0030	462
Total Other Short-Term Investments	829,000	0.0030	2,487
Mortgage Bonds	245,000	0.0500	12,250
Net Admitted Collateral Loans	0	0.0500	0
Bonds			
U.S. Government	6,395,684	0.0000	0
Class 01 U.S. Government Agency Bonds	0	0.0030	0
Class 01 Unaffiliated Bonds	46,060,660	0.0030	138,182
Class 02 Unaffiliated Bonds	4,987,460	0.0100	49,875
Class 03 Unaffiliated Bonds	704,112	0.0200	14,082
Class 04 Unaffiliated Bonds	352,056	0.0450	15,843
Class 05 Unaffiliated Bonds	117,352	0.1000	11,735
Class 06 Unaffiliated Bonds	58,676	0.3000	17,603
Subtotal — Bonds subject to bond size factor	58,676,000		247,319
Estimated number of bonds	120		
	Count	Multiplier	Weighting
0 to 50	50	2.50	125
50 to 100	50	1.30	65
100 to 400	20	1.00	20
More than 400	0	0.900	0
Sum (weighted average)	120	1.750	210
Bond size factor RBC	247,319	0.750	185,490
Asset concentration RBC	87,825,000	0.0012	105,390
Total R_1 Charge — Fixed Income Assets Risk			**553,398**

THE RBC CHARGE FOR ASSET RISK ASSOCIATED WITH EQUITY INVESTMENTS (R_2)

R_2 includes the charge for risk associated with equity investments in the following:

1. Holding company
2. Upstream affiliate (i.e., parent company)
3. Insurance subsidiaries that are not subject to RBC (other than alien insurers)
4. Investment affiliate
5. Other non-insurance subsidiaries

6. Off-balance sheet collateral and Schedule DL, Part 1, Assets
7. Replication (synthetic asset) transactions and mandatorily convertible securities
8. Insurance affiliates that are subject to RBC
9. Unaffiliated stocks
10. Real estate
11. Schedule BA assets
12. Miscellaneous assets, including receivables for securities, aggregate write-ins for invested assets and derivatives

The RBC charge for the first six items listed above follows the same approach as described for fixed income securities in R_1, with the exception that the calculation is applied to the book/adjusted carrying values of common and preferred stocks instead of bonds. In addition, as discussed for R_1, half of the charge for replication transactions and mandatorily convertible securities listed above as item 7 is applied to R_2.

Similarly, there is the additional charge for asset concentration in the 10 largest issuers for each type of equity investment. The calculation is performed as described within the previous section of this chapter titled, "The RBC Charge for Asset Risk Associated with Fixed Income Investments (R_1)".

Table 89 provides perspective on the relevance of the above items to the R_2 charge based on the NAIC's compilation of 2011 RBC results for the industry.[153]

[153] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

TABLE 89

Aggregate for 2,600 Property/Casualty Companies R_2 Component of 2011 RBC USD in 000s		
R_2 – Asset Risk – Equity	Totals	Distribution
1. Holding company	2,148,678	3%
2. Parent company	88,198	0%
3. Insurance subsidiaries not subject to RBC	106,163	0%
4. Investment affiliate	274,407	0%
5.Other non-insurance subsidiaries	2,681,834	4%
6. Off-balance sheet collateral and Schedule DL, Part 1, Assets	32,430	0%
7. Replication transactions and mandatorily convertible securities	157,300	0%
8. Insurance affiliates that are subject to RBC	*Not separately provided*	0%
9. Unaffiliated stocks	26,300,329	35%
10. Real estate	1,044,097	1%
11. Schedule BA Assets	20,496,158	28%
12. Miscellaneous assets	189,348	0%
13. Asset Concentration (Equity)	20,838,585	28%
Total R_2	**74,357,527**	**100%**

Investments in unaffiliated stocks and Schedule BA assets, coupled with the asset concentration charge, represented nearly all of the risk charge within the R_2 category for the industry in 2011.

We won't get into all of the details underlying the calculations of the first seven items, as they were presented in the previous section of this chapter ("The RBC Charge for Asset Risk Associated with Fixed Income Investments (R_1)"). We will, however, provide an example to illustrate the calculation of the RBC charge for equity investment in a holding company (item 1), and then continue by providing a brief discussion of the charges for the remaining types of equity investments (items 8 through 12).

Holding Company

For investment in a holding company, the RBC charge is 0.225 times the holding company value in excess of the carrying value (i.e., holding company value minus carrying value) for indirectly owned insurance affiliates calculated in R_0. Let's use an example to illustrate. In this example we will use another fictional company named Reporting Entity Insurance Company (REIC).

Assume REIC purchased 100% of the shares in a holding company called HC Company in 2011. Also assume that HC Company has the following assets on its December 31, 2011, balance sheet, as illustrated in Table 90.

TABLE 90

Total assets held by HC Company as of December 31, 2011		
Type of asset	Assets 12/31/2011	Distribution by asset type
U.S. Sub Life Insurance Company	5,000,000	10%
U.S. Sub Property/Casualty Insurance Company	15,000,000	30%
UK Sub Property/Casualty Insurance Company	10,000,000	20%
Cash	8,000,000	16%
Other assets	12,000,000	24%
Total assets	50,000,000	100%

U.S. Sub Life Insurance Company, U.S. Sub Property/Casualty Insurance Company and UK Sub Property/Casualty Insurance Company are directly owned by HC Company and indirectly owned by REIC as a result of REIC's ownership of HC.

Recall that the book/adjusted carrying value is used in computing the R_0 charge. The carrying value of an indirectly owned insurance subsidiary will depend on the carrying value of the holding company and percentage of the holding company carrying value that the subsidiary represents. Let's continue our example to illustrate.

Assume that REIC carried HC Company on its Annual Statement at year-end 2011 at a value of $55 million, which is equal to the market value of the shares. Of this amount, 10%, or $5.5 million, would represent the carrying value of U.S. Sub Life Insurance Company for purposes of determining the R_0 charge in REIC's RBC calculation. Similarly, $16.5 million (= 0.3 * $55 million) would be the carrying value for U.S. Sub Property/Casualty Insurance Company, and $11 million is the value for the alien insurer, UK Sub Property/Casualty Insurance Company.

If REIC had only purchased, for example, 66% of the shares of HC Company, each carrying value would be adjusted by REIC's ownership interest of 66%. The corresponding values would be $3.63 million, $10.89 million and $7.26 million for the three subsidiaries of HC Company, respectively.

Now back to our discussion of the R_1 charge for investments in holding companies. The RBC charge is 0.225 times the holding company value in excess of the carrying value of indirectly owned insurance affiliates calculated in R_0. In our example, this would be 0.225 times $22 million, where $22 million is derived as in Table 91.

TABLE 91

Reporting Entity Insurance Company (REIC)	Carrying value
HC Company	55,000,000
U.S. Sub Life Insurance Company	5,500,000
U.S. Sub Property/Casualty Insurance Company	16,500,000
UK Sub Property/Casualty Insurance Company	11,000,000
Subtotal, indirectly owned insurance subsidiaries	33,000,000
Holding company minus indirectly owned subs	22,000,000

Insurance Affiliates that are Subject to RBC

As noted in the earlier section of this paper titled "Insurance Subsidiaries Subject to RBC – Ownership in Common Stock", the RBC charge for investments in common stock in excess of the amount allocated to R_0 is allocated to R_2.

Unaffiliated Stocks

The RBC charge for unaffiliated preferred stocks and hybrid investments is equal to the book/adjusted carrying value of the asset multiplied by a factor, where the factors vary based on the NAIC class. The classes for preferred stocks and hybrid securities are the same as those for bonds, as are the RBC factors, with the exception that there are no federal government guaranteed preferred stocks:

TABLE 93[154]

NAIC class for preferred stocks and hybrid securities	RBC factor
Class 01 – Highest credit quality	0.003
Class 02 – High credit quality	0.010
Class 03 – Medium credit quality	0.020
Class 04 – Low credit quality	0.045
Class 05 – Lowest credit quality	0.100
Class 06 – In or near default	0.300

The RBC charge for unaffiliated common stocks is computed separately for non-government money market funds and other admitted unaffiliated common stocks. The computation applies a specific factor to the book/adjusted carrying value. The RBC factor for non-government money market funds of 0.003 is equal to that for cash because these

[154] Note Table 92 has been omitted from this version of our publication. It serves as a placeholder to illustrate the R2 calculation and will be included when the NAIC resolves the inconsistency between the written instructions to RBC and the NAIC spreadsheet.

investments are considered to be of the same risk level. The factor applied to other common stocks is 0.150.

Real Estate, Schedule BA and Miscellaneous Assets

In general, the RBC charge for real estate investments, other long-term invested assets (as per Schedule BA) and miscellaneous assets are computed as a factor times the book/adjusted carrying value for those assets. The RBC charges for each investment are as follows:

- 0.100 times the book value of real estate (Annual Statement Schedule A assets)
- 0.200 times the book value for other long-term invested assets (Annual Statement Schedule BA assets) other than collateral loans
- 0.050 times the book value for receivables for securities, aggregate write-ins for invested assets and derivatives

R_2 for Fictitious

Table 94 shows the calculation of R_2 for Fictitious Insurance Company. As with the calculation of R_1 for Fictitious, we had to make several assumptions because only excerpts of Fictitious' Annual Statement are included with this publication. One such assumption that is relevant to the calculation of R_2 is the distribution of stock by RBC class.

TABLE 94[155]

R_2 Charge for Fictitious Insurance Company NAIC Risk-Based Capital 2011			
Total R_0 Charge — Affiliated Insurance Co. Asset Risk			0
Total R_1 Charge — Fixed Income Asset Risk			553,398
R_2 Calculation — Equity Assets	**Amount Held**	**Charge Factor**	**RBC Charge**
Unaffiliated Preferred Stock			
Class 01 Unaffiliated Preferred Stock	10,880	0.0030	33
Class 02 Unaffiliated Preferred Stock	0	0.0100	0
Class 03 Unaffiliated Preferred Stock	0	0.0200	0
Class 04 Unaffiliated Preferred Stock	23,120	0.0450	1,040
Class 05 Unaffiliated Preferred Stock	0	0.1000	0
Class 06 Unaffiliated Preferred Stock	0	0.3000	0
Unaffiliated Common Stock			
Non-government money market funds	0	0.0030	0
Other admitted unaffiliated common stock	19,340,000	0.1500	2,901,000
Non-Insurance Affiliated Common Stock	0	0.2250	0
Real Estate	3,845,000	0.1000	384,500
Encumbrances	0	0.1000	0
Schedule BA Assets Excluding Collateral Loans	4,628,000	0.2000	925,600
Receivables for Securities	0	0.0500	0
Aggregate W/I for Invest Assets	(5,000)	0.0500	0
All Other Invested Assets	79,000	0.0500	3,950
Asset concentration RBC	87,825,000	0.0010	87,825
Total R_2 Charge — Equity Assets Risk			**4,303,948**

THE RBC CHARGE FOR CREDIT RISK (R_3)

Credit risk reflects counterparty (the entity owing the insurance company money) credit exposure for receivables, including those for reinsurance. It contemplates the risk that the counterparty will default (or not pay in whole or in part) and the risk associated with estimating the amounts recorded for counterparty receivables.

R_3 is the charge for credit risk associated with the following:

1. Non-invested assets
2. Reinsurance recoverable (reinsurance RBC)
3. Health credit risk

[155] Note the RBC charge is greater than or equal to 0 as in the case of Aggregate Write-ins (W/I) for Invested Assets in Table 94.

The charge to the property/casualty industry in 2011 for R_3 is provided in Table 95.[156]

TABLE 95

Aggregate for 2,600 Property/Casualty Companies R_3 Component of 2011 RBC USD in 000s		
R_3 – Asset Risk – Credit	Totals	Distribution
1. Non-invested assets	3,172,945	20%
2. Reinsurance RBC	12,341,422	80%
3. Health credit risk	-	0%
Total R_3	**15,514,367**	**100%**

As expected, the risk associated with uncollectible reinsurance (due both to reinsurers unable and unwilling to pay) comprised the largest portion of the R_3 charge in 2011. While the health credit risk charge will be introduced below for completeness, it was $0 in 2011 and has been since at least 2007.

Non-invested assets

R_3 includes the charge for risk associated with credit exposure resulting from the following non-invested assets listed on the balance sheet:

1. Investment income due and accrued
2. Amounts receivable relating to uninsured plans
3. Federal income tax recoverable
4. Guaranty funds receivable or on deposit
5. Recoverable from parent, subsidiaries and affiliates
6. Aggregate write-in for other than invested assets

The RBC charge for these assets is the net admitted value included in column 3 of the asset side of the balance sheet (page 2 of the Annual Statement), each multiplied by a factor of 0.050, with the exception of investment income due and accrued, which receives a factor of 0.010. The charge for investment income due and accrued is equal to the RBC factor applied to unaffiliated class 02 bonds because most of the investment income due and accrued comes from bonds, which are typically the largest holding for a property/casualty insurance company. The receivable assets are generally short-term balances generated in the normal course of doing business. The capital charges for these assets are lower than other long-term recoverables.

[156] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

Reinsurance recoverables

The R_3 charge for reinsurance recoverables is computed as 10% of the reinsurance recoverable amounts in column 15 of Schedule F, Part 3, of the Annual Statement. This charge reflects the risk that reinsurers can't or won't pay amounts the reporting entity expects to receive under the terms of its reinsurance contracts. Certain reinsurers are excluded from this charge. Recoverables from a reporting entity's cession to U.S. parents, subsidiaries and affiliates, state-mandated involuntary pools and associations, and federal insurance programs are excluded from the calculation. These recoverables are deemed to be of less risk because they are either due from a related entity, subject to joint and several liability on all participating companies, or backed by a governmental body. Further, a charge for involuntary pools was scrutinized by insurance companies at the onset because it was deemed as a disincentive for insurers to serve the involuntary market.[157]The recoverables due from reinsurers subject to the charge are reduced for the additional liability already established in the provision for reinsurance on line 16 of the liability side of the balance sheet and as calculated in Schedule F, Part 7. Recall from *Chapter 7. Statutory Balance Sheet*: A Measure of Solvency, the provision for reinsurance is a penalty that applies to all reinsurers that are slow to pay, disputing amounts owed to the ceding company, and/or unauthorized without posting required collateral.

Because the calculation of the provision for reinsurance considers all reinsurers, the provision must be allocated to those reinsurers that are subject to the R_3 charge.

The 10% was determined judgmentally and has remained since inception of the RBC formula for property/casualty insurers. Despite the relatively low impact that R_3 appears to have on the industry as a whole, the charge has been subject to criticism from insurance carriers, who have argued that the charge doesn't differentiate between highly rated reinsurers or those recoverable that are backed by collateral.[158] However, this charge continues to be included in the calculation. Over the years there has been considerable focus in the property/casualty industry on reinsurance. For one, uncollectible reinsurance was deemed partly to blame for the failure of Mission Insurance Company and Transit Casualty Company,[159] which helped set RBC in motion for the property/casualty industry. And throughout the years, reinsurance has

[157] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 322.

[158] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 317-319.

[159] U.S. House of Representatives Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, Failed Promises-Insurance Company Insolvencies, 101 Cong., 2rid sess., February 1990. Washington, D.C.: GPO, 1993.

been used in certain situations inappropriately to enhance a company's financial position or hide poor financial results.[160]

The RBC charge for reinsurance recoverable is split 50%/50% between R_3 and R_4 if the reserve RBC (see discussion below) exceeds the sum of the credit risk RBC for non-invested assets and reinsurance recoverables. Otherwise, the full amount of the reinsurance recoverable RBC charge is included in R_3.

Health credit risk

Finally, R_3 also includes a charge for health credit risk for those reporting entities writing 5% or more in accident and health premiums in any of the last three years. This charge considers the risk associated with transferring health risks (morbidity and mortality) to health care organizations through fixed prepaid amounts (i.e., capitated payments).[161] There is a risk of non-payment in these situations (similar to traditional reinsurance recoverables). A charge is applied to reflect the credit risk associated with the portion of capitated payments over and above security held by the reporting entity for these organizations.

Given that the charge to the industry was zero in 2011, we will not go into details of the calculation of this charge.

R_3 for Fictitious

Table 96 illustrates the calculation of R_3 for Fictitious.

[160] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 317-319.

[161] Health care organizations include health maintenance organizations or managed care organizations.

TABLE 96

R_3 Charge for Fictitious Insurance Company NAIC RBC 2011			
Total R_0 Charge — Affiliated Insurance Co. Asset Risk			0
Total R_1 Charge — Fixed Income Asset Risk			553,398
Total R_2 Charge — Equity Asset Risk			4,303,948
R_3 Calculation — Credit-Related Assets	**Amount Held**	**Charge Factor**	**RBC Charge**
Non-Affil and Alien Affil Reinsurance Recoverables Subject to RBC	11,229,258	0.1000	1,122,926
Interest, Dividends, etc. Due and Accrued	726,000	0.0100	7,260
Federal Income Tax Recoverable	2,437,000	0.0500	121,850
Recoverable from Parent, Subs and Aff.	0	0.0500	0
Agg. Write-ins for other than Inv. Assets	586,000	0.0500	29,300
All Other	10,000	0.0500	500
Total			1,281,836
Half of Reinsurance Recoverables Moved to R_4 Calculation			561,463
Total R_3 Charge — Credit-Related Asset Risk			**720,373**

THE RBC CHARGE FOR RESERVE RISK (R_4)

As noted, R_4 is the largest of the RBC charges for the property/casualty insurance industry. Reserve risk contemplates the risk that a reporting entity's loss and LAE reserves will develop adversely. This charge is calculated separately by line of business using Schedule P data for the last 10 years.

R_4 is the charge for reserve risk associated with the following:

1. Reinsurance recoverable (reinsurance RBC)
2. Unpaid loss and LAE (reserve RBC)
3. Excessive premium growth
4. Accident and Health (A&H) claim reserves (health RBC)

Table 97 provides perspective on the relevance of each component of R_4 based on the NAIC report on 2011 RBC results.[162]

[162] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

TABLE 97

Aggregate for 2,600 Property/Casualty Companies R_4 Component of 2011 RBC USD in 000s		
R_4 — Underwriting Risk — Reserves	Totals	Distribution
1. Reinsurance RBC	8,005,311	8%
2. Reserve RBC	93,259,716	91%
3. Excessive premium growth	709,540	1%
4. Health RBC	202,078	0%
Total R_4	**102,176,645**	**100%**

Reserve RBC comprised the vast majority of the charge in 2011.

Within the following sections we provide a discussion of each of these categories, with considerable focus on the reserve RBC since this represents the crux of the R_4 charge.

Reinsurance RBC

Recall from our discussion of the R_3 charge, reinsurance RBC represents the minimum amount of capital included in the RBC formula that would be needed to survive the risk of reinsurer default.

The reinsurance RBC within R_4 is equal to the other half of the reinsurance recoverable amount computed in R_3 unless the reserve RBC is less than the RBC for reinsurance plus non-invested assets. If this is the case, the entire reinsurance RBC charge is included in R_3 and the reinsurance RBC within R_4 is zero. The reserve RBC limitation is put in place so the insurance company cannot diversify away a portion of its credit risk in the situation where the company has limited net reserves.

Reserve RBC

Reserve RBC is determined by applying a set of factors (called company RBC percent) to the company's net loss and LAE reserves before non-tabular discount. Nominal (undiscounted) reserves are used because consideration for investment income is made by applying the same set of discount factors to all property/casualty insurance companies (called the adjustment for investment income). The use of a common method for considering investment income puts all property/casualty companies on an equivalent basis rather than having differences due to discount rates and payout patterns.

The calculation is performed separately by line of business using the same lines of business as used in Schedule P of the Annual Statement, with the exception that certain lines of business are combined. The occurrence and claims-made categories are combined for other liability and product liability, and reinsurance property and financial lines are combined.

Once the calculation of the base loss and LAE reserve RBC is performed for each line of business, two adjustments are made: one for loss sensitive (e.g., retrospectively rated) contracts and the other for loss concentration. Similar to the asset concentration factor in R_1 and R_2, the loss concentration factor considers diversification in the RBC calculation. Both result in reductions to the reserve RBC.

We will discuss each component of the calculation, providing examples where applicable.

Base loss and LAE reserve RBC by line of business

The loss and LAE reserve RBC by line of business is computed as follows:

Equation 1: Base Loss and LAE Reserve RBC

= [[Company RBC % + 1] * Adjustment for investment income] – 1
* [Net loss and LAE reserve + Other discounts not in the reserves].

The net loss and LAE reserves used in this calculation are provided in Schedule P, Part 1, column 24, for each line of business. As previously noted, these are gross of non-tabular discount, but net of tabular discount.

Company RBC percentage

The company RBC percent is the crux of the reserve risk charge. According to the NAIC RBC instructions, "These factors are designed to provide a surplus cushion against adverse reserve development."[163]

For each line of business, the company RBC percent is determined based on a 50% weighting applied to the straight industry reserve RBC percent and 50% applied to the industry reserve RBC percent adjusted for the company's own experience.

- Industry reserve RBC percent
  The industry reserve RBC percent is a set of factors provided by the NAIC and is the same for all property/casualty insurance companies. There is one factor for each Schedule P line of business. According to the NAIC RBC instructions, these percentages "are based on detailed analysis of historical reserve development patterns found in Parts 2 and 3 of Schedule P for each major line of business."[164] They have been determined in the past by computing the ratio of net incurred loss and defense and cost containment (DCC) development during a particular period from Schedule P, Part 2, to the net loss and DCC reserves as of the earlier period (calculated by subtracting the figures in Schedule P, Part 3 from those in Part 2). The

[163] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 20.
[164] Ibid.

industry percent factor is selected based on the average for all companies within the property/casualty insurance industry, by line of business.

The industry RBC percent factors are not always updated annually, but rather on an as-needed basis. In fact, the factors in the original RBC model remained for well over 10 years. The only interim change was made to reflect the change in the format of Schedule P, such as when medical malpractice was split into its claims made and occurrence components.

The NAIC developed the original factors in 1993 based on an actuarial analysis using data evaluated as of 1991 and prior.[165] This analysis computed the aforementioned ratios of incurred loss and DCC to prior period reserves over each evaluation period provided in Schedule P, Parts 2 and 3 of the 1991 Annual Statement. Nine ratios were computed, the first of which provided development on accident years 1982 and prior over the period December 31, 1982, to December 31, 1991, as a ratio to loss and DCC reserves as of December 31, 1982. The remaining eight ratios were computed measuring development to December 31, 1991, for periods beginning December 31, 1983, through December 31, 1990. The nine ratios were calculated for each line of business by company. An average was computed over all companies for each evaluation period. The industry RBC percent factor for each line of business was set equal to the largest ratio over all of the evaluation dates. This is commonly referred to as the "worst-case year" ratio. The belief is that development of this magnitude could occur in the future because it occurred in the past.[166]

The original factors remained until 2008, when the NAIC adopted changes recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee in a report titled *An update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*. In this study, the Committee recognized that the insurance industry had been through many changes since the original factors were developed, namely changes in the underwriting cycle resulting in shifts in reserve redundancies/deficiencies. Furthermore, despite the formulaic approach of the worst-case year, the Committee found that the original factors could not be easily replicated and varied considerably relative to expectations as to the level of adverse development inherent in a particular line of business. The Committee therefore recommended developing a revised approach that would meet the following "criteria:

[165] American Academy of Actuaries, "An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group," page 3.
[166] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, pages 327-329.

1. Simple to apply and understand;
2. Responsive to actual history and underlying risk;
3. Easily reproducible by future practitioners;
4. Statistically relevant;
5. Resulting in indications that could be adopted without disruptive swings in required capital for regulated companies."[167]

The revised approach differed from the original approach in four significant ways:

1. The historical data was filtered and screened to remove companies with insufficient or unusual data points. Examples include companies with less than 10 years of experience, and/or companies with negative paid, reserve and/or incurred loss and DCC in any one accident year.
2. Rather than selecting the ratio from the worst-case year over the average of all companies, the 87.5 percentile of all data points was used. "The 87.5 percentile was selected because it represents a conservative view of the risk in each line but is also broadly consistent with the existing factors."[168]
3. A floor was set such that the indicated industry reserve RBC percent factor resulted in a minimum charge of 5% after adjustment for investment income.
4. The indicated industry reserve RBC percent factors were capped to limit the change in the base loss and LAE reserve RBC. The Committee recommended a cap of 35%.[169]

For example, the indicated industry reserve RBC factor for private passenger automobile liability that was produced using the revised methodology before capping was 0.128, and the change in the investment income adjustment factor was 0.927. Using Equation 1 (assuming a net loss and LAE reserve balance of $1), the implied based loss and LAE reserve RBC is 0.046. As displayed below, this represented a change of -70.5% from the original industry reserve RBC factor of 0.254 with adjustment for investment income of 0.921:

Indicated base loss and LAE reserve RBC based on 2007 methodology before capping:

= [[[0.128 + 1] * 0.927] – 1] *$1
= 0.046

[167] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, pages 2 and 3.
[168] Ibid, page 6.
[169] Ibid, pages 6 and 7.

Original base loss and LAE reserve RBC:

= [[[0.254 + 1] * 0.921] – 1] *$1

= 0.155

Change in base loss and LAE reserve RBC from original to revised (2007) methodology:

= 0.046 / 0.155 - 1
= -70.5%

Capped at 35%, the revised methodology produced an industry reserve RBC percent factor of 0.187, which was calculated as follows:

= [[[(-0.350 +1) * 0.155] +1] / 0.927] - 1
= 0.187

To summarize, the industry RBC reserve factor indicated from the revised 2007 methodology was 0.128 before capping and 0.187 after the 35% cap. The 35% cap reduced the impact of the change in methodology from the original factor of 0.254.[170]

The NAIC adopted the factors in 2008 using the revised methodology and indications of the September 2007 report, however with a cap at 15% instead of 35%. The revised factors were applied to RBC calculations for the 2008 reporting year. To continue with the previous example, capping at 15% resulted in an industry RBC reserve percent factor of 0.xxx, which was calculated as follows:

= [[[(-0.150 +1) * 0.155] +1] / 0.927] - 1
= 0.221[171]

Subsequent changes to the industry reserve RBC percent factors were also made and adopted in 2009 and 2010. The 2009 update applied a 15% cap to the factors adopted in 2008. That is, 2008 factors were substituted in for the "original" factors in the previous calculations, for purposes of capping the impact from the effects of the 2007

[170] Ibid, Appendix II, Exhibit I – III.
[171] American Academy of Actuaries, *Update to P/C Risk-Based Capital Underwriting Factors Presented to National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, March 2008.

revised methodology. This revision was adopted in 2009 and applied to the 2009 reporting year.[172]

Two changes were made in 2010. First, in March 2010, the American Academy of Actuaries P/C Risk-Based Capital Working Group updated the 2007 methodology but with 2008 data. As with the 2007 study, the factors were capped to cause no more than a 15% change to the current factors (2009 updated factors), and the minimum charge was set at 5%.[173] Second, in June 2010, the March 2010 study was updated using a 5% cap instead of 15%.[174] The 2010 study capped at 5% was adopted and applied to the 2010 reporting year.

- Company "development factor"

  The reporting entity's own loss experience is considered by adjusting the industry reserve RBC percent by the company "development factor" by line of business. This development factor is calculated as the ratio of the sum of incurred loss and DCC from nine prior accident years evaluated as of the current year to the sum of the initial evaluations of those incurred amounts. The current incurred loss and DCC values come from Schedule P, Part 2, column 10, with the initial values coming from the first incurred value shown for each accident year. The initial values lie along the diagonal. This development factor measures how the initial estimates of ultimate loss and DCC have developed based on what the company currently knows. The factor is capped at 400% to limit the impact of anomalous, one-time results.

  The reporting entity may not rely on its own experience in determining the company RBC percent if:

  1. Either the initial or current values shown in Schedule P, Part 2, are negative for any year.
  2. The current value is zero for any year.
  3. The sum of the initial values is zero across all years.

Adjustment for investment income

With the exception of workers' compensation tabular reserves, and instances where a company has explicitly requested and received permission from state regulatory authorities to discount non-tabular reserves, insurance companies are required to record loss and LAE

[172] American Academy of Actuaries, *2009 Update to P/C Risk-Based Capital Underwriting Factors Presented to National Association of Insurance Commissioners' P/C Risk-Based Capital Working Group*, December 2008.
[173] American Academy of Actuaries, *2010 Update to P/C Risk-Based Capital Underwriting Factors Presented to the National Association of Insurance Commissioners' Property Risk-Based Capital Working Group*, March 2010.
[174] Letter from the American Academy of Actuaries P/C Risk-Based Capital Working Group to the National Association of Insurance Commissioners Capital Adequacy (E) Task Force *Re: Risk-Based Capital Underwriting Factors – 2010 Update – Addendum Using 5 Percent Cap*, dated June 22, 2010.

reserves on an undiscounted basis under statutory accounting. This creates an inherent margin in surplus. For purposes of determining required capital under RBC, the reserves are adjusted to remove this margin.[175]

Similar to the industry reserve RBC percent, the investment income factors are provided by the NAIC. According to the NAIC RBC instructions, "This discount factor assumes a 5 percent interest rate. For lines of business other than workers' compensation and the excess reinsurance lines, the payment pattern is determined using an IRS type methodology applied to industry-wide Schedule P data by line of business; otherwise, a curve has been fit to the data to estimate the average payout over time. The discount factor for workers' compensation is adjusted to reflect the tabular portion of the reserves that is already discounted."[176] Tabular discounting is typically permitted only on the indemnity portion of workers' compensation reserves and not to the medical component due to the relatively fast-paying of medical expenses.

Similar to the industry reserve RBC percent, the investment income adjustment factors were updated in September 2007 from their original values. An approach similar to the original methodology was used, with the exception that updated data through 2005 was used.[177]

Other discounts not included in the reserves

The adjustment for investment income is applied to reflect non-tabular discount. It is applied to loss and LAE reserves on a net of reinsurance basis, net of tabular discount, but before any non-tabular discount, as provided in column 24 of Schedule P, Part 1. If for some reason the amounts included in column 24 are net of non-tabular discount, the amount of the non-tabular discount would need to be added back to the reserves before applying the adjustment for investment income.

These amounts are generally equal to zero; the amount of non-tabular discount is included in columns 32 and 33 of Schedule P, Part 1.

Adjustment for loss-sensitive business

The loss sensitive adjustment provides a discount for business that is written by the insurance company on contracts for which the premium is determined based on the insured's loss experience (i.e., retrospectively rated contracts). The loss experience is shared in whole or in part with the insured. Therefore, the risk of adverse loss development is also shared with the insured. The insurer needs less surplus to survive this risk of adverse loss development than it does if none of the policies were written on a loss sensitive basis thereby resulting in a

[175] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, page 354.
[176] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 20.
[177] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, page 5.

discount to the company's RBC reserve charge to reflect this reduction in risk. This discount is computed separately by line of business.

Prior to summing the reserve risk RBC over all lines of business written by the reporting company, an adjustment is made to reflect loss-sensitive business. The following provides the application of the loss-sensitive adjustment:

Equation 2: Loss and LAE RBC after discount
= Equation1 – Loss-sensitive discount
= Base Loss and LAE Reserve RBC – Loss-sensitive discount.

Where the loss-sensitive discount
= Loss-sensitive discount factor
* Base loss and LAE RBC (from Equation 1).

The loss-sensitive discount factor is 30% for net loss and expense reserves associated with direct loss-sensitive contracts and 15% for net loss and expense reserves associated with assumed loss-sensitive contracts. The difference stems from the potential offset associated with reinsurance contracts for commissions that are loss sensitive as well. Oftentimes such business is written with sliding scale commissions whereby the commission the ceding company receives from the reinsurer is dependent upon the loss ratio on the business; the lower the loss ratio, the higher the commission paid by the reinsurer to the ceding company, subject of course to specified limits. For example, the reinsurer may receive additional premium from the reinsured as losses emerge but in turn have to pay additional commission due to a reduction in loss ratio. As with direct loss-sensitive contracts, the risk of adverse development on assumed contracts is reduced; however, it is not reduced by as much due to the potential offset from ceding commissions.

The portion of net loss and expense reserves attributed to direct and assumed loss-sensitive contracts is found in column 3 of Schedule P, Parts 7A and 7B, respectively.

Adjustment for loss concentration

The loss concentration adjustment is applied to the sum of the RBC reserve charges for all lines of business and reflects diversification across the lines. The theory underlying this discount is that the reserves for each line of business written by an insurance company would not be expected to develop adversely or favorably at the same time, assuming such development is random.

The final net loss and LAE RBC charge is computed as follows:

Equation 3: Net loss and LAE RBC
= Total loss and LAE RBC after discount for all RBC lines * 1,000
* Loss concentration factor.

Where the loss concentration factor

$$= \frac{\text{Net loss and LAE for the largest line} * 0.30}{\text{Net loss and LAE for all lines combined}} + 0.70.$$

The loss concentration factor is determined by taking the percentage of total net loss and LAE reserves for the largest line of business to the total net loss and LAE for all RBC lines combined, multiplying this percentage by 0.300 and then adding the result to 0.700.[178]

Because all adverse loss development may not always be a random fluctuation in losses, such as when the company increases loss reserves to improve its earnings position, adverse development across lines may not be totally independent. This formula recognizes that there may be some interdependence between lines of business.

A monoline writer would not receive any discount, as the calculation would be 1.00 * 0.300 + 0.700, which produces a loss concentration factor of 1.000. However, a company writing 60% of its business in its largest line would receive a discount to its RBC reserve risk charge of 12%, or a loss concentration factor of 0.880 (0.60 * 0.300 + 0.700), which is a discount of 12% to the RBC reserve risk.

Illustration of reserve RBC calculation

The following provides an illustration of the reserve RBC calculation for REIC. Assume REIC writes only four lines of business: homeowners/farmowners (HO/FO), private passenger automobile liability (PPAL), workers' compensation (WC) and other liability (OL). The source of the company's own data is Schedule P, which is provided in thousands of U.S. dollars.

[178] For clarity, largest line is determined based on the Schedule P line of business having the highest amount of net loss and LAE reserves as of the filing date. Note, despite being separate lines of business within Schedule P, claims-made and occurrence business are combined for purposes of this calculation. For example, other liability claims-made and occurrence would be added together in determining whether other liability is the largest line.

TABLE 98

Reporting Entity Insurance Company (REIC)							
	Given the following data:	HO/FO	PPAL	WC	OL	Total All Lines	Source
(1)	Industry Average Loss & LAE Development Ratio	0.962	0.989	0.999	0.954		*Provided by NAIC*
(2)	Company Average Loss & LAE Dvpt Ratio for prior 9 years	1.070	1.100	1.125	1.150		*Company Schedule P, Part 2*
(3)	Industry Loss & LAE RBC %	0.201	0.192	0.324	0.511		*Provided by NAIC*
(4)	Adjustment for Investment Income	0.938	0.928	0.830	0.852		*Provided by NAIC*
(5)	Company Net Loss & LAE Unpaid, gross of non-tabular discount	10,000	8,000	17,000	12,000	47,000	*Company Schedule P, Part 1*
(6)	Other Discount Amount Not Included in Unpaid Loss & LAE	-	-	-	-	-	*Company data*
(7)	Portion of Reserves on Retro-Rated Plans:						
	(a) % Direct Loss Sensitive	0.0%	0.0%	20.0%	0.0%		*Company Schedule P, Part 7A, Col 3*
	(b) % Assumed Loss Sensitive	0.0%	0.0%	0.0%	0.0%		*Company Schedule P, Part 7B, Col 3*
	Calculation of Reserve RBC	HO/FO	PPAL	WC	OL	Total All Lines	
	Step 1: Base Loss & LAE Reserve RBC						
(8)	Ratio of Company Average Development Ratio to Industry	1.112	1.112	1.126	1.205		*= (2) / (1)*
(9)	Company Loss & LAE RBC %	0.212	0.203	0.344	0.563		*= 50% of (3) + 50% of (8)*(3)*
(10)	Base Loss & LAE Reserve RBC Charge	1,369	931	1,964	3,980		*={ [((9)+1) * (4)] - 1 } * { (5) + (6) }*
	Step 2: Loss & LAE RBC After Discount						
(11)	Loss-sensitive Factor	-	-	0.060	-		*= 30% of (7a) + 15% of (7b)*
(12)	Loss-sensitive Discount	-	-	118	-		*= (11) * (10)*
(13)	Loss & LAE RBC After Discount	1,369	931	1,846	3,980	8,138	*= (10) - (12)*
	Step 3: Net Loss & LAE RBC * 1,000						
(14)	Distribution of Loss & LAE Reserves by Line	21%	17%	36%	26%		*= (5) by line / (5) total*
(15)	Loss Concentration Factor					0.809	*= 0.300 * Max of (14) + 0.700*
(16)	**Net Loss & LAE RBC * 1,000**					**6,573,735**	*= (13) * (15) * 1,000*

As displayed in Table 98, the reserve RBC included in the R_4 charge for REIC is $6,215,668. The main driver of the reserve RBC is the company loss and LAE RBC percent. This percentage is higher than the industry RBC percent in line 3 because REIC's ultimate estimates tend to develop adversely, as evidenced by the ratios of company development to industry development in excess of 1.000 in line 8 above.

Table 99 provides another example of the detailed R_4 calculation for the commercial automobile liability (CAL) line of business for Fictitious Insurance Company. This calculation uses the financial statements and Schedule P line detail found in other examples within this publication.

TABLE 99

R_4 Charge for Commercial Automobile Liability (CAL) *Fictitious Insurance Company* *NAIC Risk-Based Capital 2011*	
R_4 — Reserve Risk	**CAL**
Industry Average Development	0.992
Company Average Development	0.901
Company Average Development / Industry Average Development	0.908
Industry Loss & LAE RBC %	0.230
Company RBC %	0.219
Loss & LAE Unpaid	3,450,000
Adjustment for Investment Income	0.911
Loss & LAE Reserve RBC Before Discounts	381,256
Percent Loss-sensitive Direct Loss and Expense Reserves	0.011
Loss-sensitive Direct Loss and Expense Reserve Discount Factor	0.300
Loss-sensitive Discount for Loss and Expense Reserves	1,247
Loss and LAE Reserve RBC	380,009

Excessive premium growth

The estimation of unpaid loss and LAE reserves is subject to greater uncertainty for companies that are growing rapidly. The reasons are twofold. First, an insurance company does not have as much insight into new business as it does into risks that are currently on the books. Second, the estimation of unpaid claims is more difficult for a growing company rather than a company in a steady state. Consider a company that decides to grow its writings by 20% over the course of a year. As a company grows throughout the year, the average writings are more heavily skewed toward the second half of the policy year. Without explicit consideration for this shift, traditional actuarial projection techniques will not adequately capture the lag in loss emergence and therefore understate the reserve need. However, the difficulty is in determining how exactly to consider this shift.

In the RBC calculation, excessive growth is defined as a three-year average growth rate in gross written premiums that is in excess of 10%. A growth rate of 10% is deemed to be a normal annual increase in premium volume. The growth rate for any single year is capped at 40%. The excess percentage (excess of 10%) is called the RBC average growth rate factor.

Average growth rate factor
= Minimum {maximum (average gross premium growth over three years, 0.10), 0.40} – 0.10.

For purposes of this calculation, gross written premiums are equal to direct written premiums from line 35 of column 1 of the Underwriting and Investment Exhibit (U&IE), plus assumed premiums from non-affiliates in column 3. To perform this calculation, Part 1 of the U&IE is required for each of the past four years. The calculation is performed using as many years as

possible, but no more than four; if the company only has one year of experience, only one year is used. However if the company is a start-up, a growth rate of 40% is used. And, if a company has no gross written premium in the current year, it is assumed not to be growing, and a growth rate of zero is used.

This calculation is formed on a group basis, for those companies that are part of a group. Therefore, each member of the group will have the same RBC average growth rate factor. The group basis is used to neither punish nor reward individual legal entities that might be growing due to a realignment of business from one company within the group to another. In this case the growth is not attributed to new business but rather a transfer or risks from one company to the other.

In addition, business acquired or divested as a "shell" is included in the calculation of the growth rate only to the extent that the liabilities are retained by the reporting entity. And, servicing carriers for assigned risk pools can exclude the written premiums associated with the involuntary pool, as the insurer has little or no control over the assignment of such risk.

The RBC average growth rate factor is multiplied by 0.450 of the net loss and LAE reserves as per the total line in Schedule P, Part 1, Summary, column 24.

Excessive premium growth charge for loss and LAE reserves =

RBC average growth rate factor * 0.450 * net loss and LAE reserves.

The 0.450 has remained unchanged since the original RBC formula for property/casualty insurers was implemented. It was determined by a member of the American Academy of Actuaries RBC Task Force (Mr. Allan Kaufman) by studying the average development in net loss and LAE reserves experienced by companies that experienced growth in excess of 10%, relative to development observed by the remainder of the industry.[179] The 0.450 is already adjusted for discount using a factor of 0.90, which was what Kaufman approximated to be the average discount factor for all lines of business.[180]

Health RBC

In addition to the charge for property/casualty lines of business, a health RBC is required for those property/casualty insurers that write 5% or more in accident and health premiums in any of the past three years. We will not go into the details of this calculation, but note that the health RBC calculation is based on the RBC formula for life insurance.

[179] Feldblum, S., "NAIC Property/Casualty Insurance Company Risk-Based Capital Requirements," PCAS LXXXIII, 1996, page 354.
[180] Ibid.

R_4 for Fictitious

Table 100 provides the R_4 calculation for Fictitious.

TABLE 100

R_4 Charge for Fictitious Insurance Company NAIC Risk-Based Capital 2011					
Total R_0 Charge — Affiliated Insurance Co. Asset Risk					0
Total R_1 Charge — Fixed Income Asset Risk					553,398
Total R_2 Charge — Equity Asset Risk					4,303,948
Total R_3 Charge — Credit-Related Asset Risk					720,373
R_4 Calculation — Underwriting Risk — Reserves	Amount Held	Charge Factor	Initial RBC Charge	Loss-sensitive Discount[181]	Final RBC Charge
Property / Casualty business					
Loss and LAE reserves — HO/FO	1,455,000	0.1237	180,018	0	180,018
Loss and LAE reserves — PPAL	2,482,000	0.1136	281,955	0	281,955
Loss and LAE reserves — CAL	3,450,000	0.1105	381,256	1,247	380,009
Loss and LAE reserves — WC	15,946,000	0.1122	1,789,141	66,019	1,723,122
Loss and LAE reserves — CMP	4,782,000	0.3087	1,476,414	0	1,476,414
Loss and LAE reserves — Med Mal Occurrence	0	0.0000	0	0	0
Loss and LAE reserves — Med Mal CM	0	0.0000	0	0	0
Loss and LAE reserves — Spec Liab	0	0.0000	0	0	0
Loss and LAE reserves — OL	20,691,000	0.3095	6,404,361	9,607	6,394,754
Loss and LAE reserves — Spec Prop	1,624,000	0.1740	282,581	0	282,581
Loss and LAE reserves — APD	310,000	0.0873	27,052	0	27,052
Loss and LAE reserves — F&S	817,000	0.2530	206,717	0	206,717
Loss and LAE reserves — Other	0	0.0000	0	0	0
Loss and LAE reserves — Products Liability	0	0.0000	0	0	0
Loss and LAE reserves — All Other					
Total	51,557,000		11,029,495	76,873	10,952,622
Company loss concentration factor		0.8200			
Loss reserve RBC after loss concentration					8,981,150
Current year growth		0.0195			
1st prior year growth		-0.0486			
2nd prior year growth		-0.0550			
Selected Average Growth		0.0000			
RBC average growth rate		0.0000			
Excessive growth charge on loss and LAE reserves	51,557,000	0.0000			0
Half of Reinsurance RBC					561,463
Total R_4 Charge — Underwriting Risk — Reserves					**9.542,613**

[181] We have assumed that the percentage of Fictitious' net loss and expense reserves that emanates from loss-sensitive contracts written on a direct basis is: 1.09% for commercial automobile liability, 12.3% for workers' compensation, 0.5% for other liability, and 0% for all other lines and for loss-sensitive contracts written on an assumed basis.

THE RBC CHARGE FOR WRITTEN PREMIUM RISK (R_5)

The final category of the RBC charge for property/casualty insurers is the R_5 charge. This is the charge for reserve risk associated with the following:

1. Net written premium (written premium RBC)
2. Excessive premium growth
3. Health premium (health premium RBC)
4. Health stabilization

As displayed in Table 101, written premium RBC comprised nearly all (99%) of the R_5 charge for the property/casualty industry in 2011. [182]

TABLE 101

Aggregate for 2,600 Property/Casualty Companies R_5 Component of 2011 RBC USD in 000s		
R_5 – Underwriting Risk – Written Premiums	Totals	Distribution
Written premium RBC	55,005,221	99%
Excessive premium growth	359,836	1%
Health premium RBC	367,044	1%
Health stabilization	22,368	0%
Total R_5	**55,754,469**	**100%**

The following provides a brief discussion of each of the first two categories of the R_5 risk charge. As previously noted, we will not go into details of the charge for health insurance. As displayed in Table 101, the charge for health premium RBC and stabilization were immaterial to the industry in 2011. The 2011 statistics for the property/casualty industry have been consistent since at least 2007.

Written premium RBC

Written premium risk contemplates the risk that future business written by the company will be unprofitable. Ideally the charge for this risk should be based on business written in the following year, but since that is an unknown quantity, business written during the current year is used as a proxy. Similar to the reserve RBC, the written premium RBC is computed by applying a set of factors to the company's net written premiums during the current year by line of business. The calculation is done on the same lines of business as the reserve RBC with a different set of factors used in the calculation.

[182] NAIC, *Property & Casualty Industry RBC Results*, 2012, http://www.naic.org/documents/research_stats_rbc_results_pc.pdf, Table 5, pages 5 through 7.

As with the reserve RBC, once the calculation of the base net written premium RBC is calculated for each line of business, two reductions are made: one for loss-sensitive business and the other for premium concentration, as opposed to loss concentration. Premium concentration reflects diversification in writings across lines of business.

Because the mechanics generally follow those used in the reserve RBC charge, we will only discuss differences in the calculation for written premium RBC.

Base net written premium RBC by line of business

The net written premium RBC by line of business is computed as follows:

Equation 4: Base net written premium RBC
= Net written premium for the current calendar year
* [[Company RBC loss and LAE ratio * Adjustment for investment income] + Underwriting expense ratio - 1.000].

The net written premiums for each line of business are provided in column 6 of Part 1B of the U&IE within the Annual Statement. Aggregate write-ins for other lines of business are included within the other liability line of business.

Company RBC loss and LAE ratio

As with the company RBC percent used in the reserve RBC, the company RBC loss and LAE ratio is the crux of the written premium risk charge. For each line of business, the company RBC loss and LAE ratio is determined based on a 50% weighting applied to the straight industry RBC loss and LAE ratio and 50% applied to the industry RBC loss and LAE ratio adjusted for the company's own experience. The industry RBC loss and LAE ratio is given by the NAIC and is the same for all property/casualty insurance companies.

As with the industry reserve RBC percent, the industry RBC loss and LAE ratios did not change from their original value until 2008, when the NAIC adopted changes recommended by the American Academy of Actuaries P/C Risk-Based Capital Committee.[183] The original industry RBC loss and LAE ratios were based on the "worst-case" accident year ratio by line of business that resulted from taking a simple average over all companies. Company loss and LAE ratios by accident year were taken from what is currently column 31 of Schedule P, Part 1. The revised methodology recommended by the P/C Risk-Based Capital Committee instead uses the 87.5 percentile of all data points.

Consistent with the industry reserve RBC percent factor, a floor was set such that the indicated industry RBC loss and LAE ratio resulted in a minimum charge of 5% after

[183] Note, however, changes were made to reflect structural changes to Schedule P over the time period, such as the separation of medical malpractice into its occurrence and claims-made components.

adjustment for investment income. In addition, the indicated industry RBC loss and LAE ratios were capped to limit the change in the base loss and LAE reserve RBC. The data was also filtered and screened to remove anomalous values (e.g., companies having less than an average of $500,000 in earned premium or a loss ratio of 0% for any one year). Further, loss ratios were capped at 300%.[184]

The reporting entity's own experience is considered by adjusting the industry loss and LAE ratios by the ratio of the company average loss and LAE ratio to the industry average loss and LAE ratio. The company average loss and LAE ratio is a straight average over the past 10 accident years of the net loss and LAE ratios provided in Schedule P, Part 1, column 31. Loss and LAE ratios for any accident year in excess of 300% are capped at that value in consideration of anomalous, one-time results.

Note that the reporting entity may not rely on its own experience in determining the company RBC loss and LAE ratio if:

1. Either the net earned premium of loss and LAE ratio for any accident year is zero or negative.
2. More than one year's net earned premium is less than 20% of the average over all years (if only one year meets this criteria the company can exclude this year from the average).
3. More than three years' net earned premiums are less than 20% of the average over all years for *all* lines (otherwise the company can exclude this specific year from the average).

Adjustment for investment income

The investment income factors are provided by the NAIC and calculated using the same assumptions as in the reserve RBC, with the exception that discounted years differ because written premium is discounted as opposed to reserves.

Underwriting expense ratio

This is the company's own underwriting expense ratio for the current year capped at 400%. It is equal to the ratio of other underwriting expenses incurred in the current year per line 4 of the income statement, divided by total net written premium for the current year from Part 1B, column 6 of the U&IE.

Underwriting expense ratio =
Other underwriting expenses / Net written premium.

[184] American Academy of Actuaries, *An Update to P/C Risk-Based Capital Underwriting Factors: September 2007 Report to the National Association of Insurance Commissioners P/C Risk-Based Capital Working Group*, pages 2 and 5.

Adjustment for loss-sensitive business

Prior to summing the base net written premium RBC over all lines of business written by the reporting company, an adjustment is made to reflect loss-sensitive business. The following provides the application of the loss-sensitive adjustment:

Equation 5: Net written premium RBC after discount
= Equation 4
- Loss-sensitive discount
= Based net written premium RBC
- Loss-sensitive discount.

Similar to the reserve RBC, a 30% discount is applied to the portion of the base net written premium RBC that is attributed to direct loss-sensitive contracts, and a 15% discount is applied to the base net written premium for assumed contracts. The portion of written net written premium attributed to direct and assumed loss sensitive contracts is found in column 6 of Schedule P, Parts 7A and 7B, respectively.

Adjustment for premium concentration

The final net written premium RBC charge is computed as follows:

Equation 6: Net written premium RBC
= Equation 5
* Premium concentration factor
= Total net written premium RBC after discount
* Premium concentration factor.

The premium concentration factor is determined by taking the percentage of total net written premiums that the largest line of business represents, multiplying this percentage by 0.300 and then adding the result to 0.700. As with the loss concentration factor, a monoline writer would not receive any discount, as the calculation would be 1.00 * 0.300 + 0.700, which produces a premium concentration factor of 1.000. However, a company writing 60% of its business in its largest line would receive a discount to its net written premium RBC charge of 12%, or a premium concentration factor of 0.880 (= 0.60 * 0.300 + 0.700).

Illustration of written premium RBC calculation

Table 102 shows the written premium RBC calculation for REIC used in our illustration of Reserve RBC. The source of the company's net written premium data is Part 1B of the U&IE, which is provided in U.S. dollars.

TABLE 102 (USD)

Reporting Entity Insurance Company (REIC)							
	Given the following data:	**HO/FO**	**PPAL**	**WC**	**OL**	**Total All Lines**	**Source**
(1)	Industry Average Loss & LAE Ratio	0.726	0.804	0.766	0.662		*Provided by NAIC*
(2)	Company Average Loss & LAE Ratio for past 10 years	0.634	0.724	0.811	0.975		*Company Schedule P, Part 1*
(3)	Industry Loss & LAE Ratio	0.937	0.969	1.033	1.042		*Provided by NAIC*
(4)	Adjustment for Investment Income	0.954	0.925	0.839	0.816		*Provided by NAIC*
(5)	Company Current Year Net Written Premium	8,500,000	7,000,000	6,200,000	5,300,000	27,000,000	*Company U/W & Inv Ex, Part 1B, Col 6*
(6)	Company Underwriting Expense Ratio	0.271	0.271	0.271	0.271		*Company Inc Stmt Line 4 divided by U/W & Inv Ex, Part 1B, Col 6*
(7)	Portion of WP on Retro-Rated Plans:						
	(a) % Direct Loss Sensitive	0.0%	0.0%	13.0%	0.0%		*Company Schedule P, Part 7A, Col 6*
	(b) % Assumed Loss Sensitive	0.0%	0.0%	0.0%	0.0%		*Company Schedule P, Part 7B, Col 6*
	Calculation of Written Premium RBC:	**HO/FO**	**PPAL**	**WC**	**OL**	**Total All Lines**	
	Step 1: Base Written Premium RBC						
(8)	Ratio of Company Average Loss & LAE Ratio to Industry	0.873	0.900	1.059	1.473		*= (2) / (1)*
(9)	Company Loss & LAE Ratio	0.878	0.921	1.063	1.288		*= 50% of (3) + 50% of (8)*(3)*
(10)	Base Loss & LAE WP RBC Charge	920,209	859,122	1,011,496	1,708,086		*= (5) * { [(9) * (4)] + (6) - 1 }*
	Step 2: Net Written Premium RBC After Discount						
(11)	Loss-sensitive Factor	-	-	0.039	-		*= 30% of (7a) + 15% of (7b)*
(12)	Loss-sensitive Discount	-	-	39,448	-		*= (11) * (10)*
(13)	Net Written Premium RBC After Discount	920,209	859,122	972,048	1,708,086	4,459,464	*= (10) - (12)*
	Step 3: Net Written Premium RBC						
(14)	Distribution of WP by Line	31%	26%	23%	20%		*= (5) by line / (5) total*
(15)	Premium Concentration Factor					0.794	*= 0.300 * Max of (14) +0.700*
(16)	**Net Written Premium RBC**					**3,542,797**	*= (13) * (15)*

As displayed in Table 102, the written premium RBC that is included in the R_5 charge for REIC is $3,542,797. Here the company average loss and LAE ratio for the past 10 years (line 2) is better than the industry average loss and LAE ratio (line 1) for the personal lines (HO/FO and PPAL) and worse for the commercial lines (WC and OL). Thus, the company loss and LAE ratio in line 9 is lower than the industry ratio in line 3 for the personal lines and higher for the commercial lines. In fact, the ratio is substantially higher for OL given the poor average loss ratio over the past 10 years, which is causing a higher overall written premium RBC for OL

than the other three lines of business, despite the fact that the premium writings are the lowest for OL.

Table 103 provides another example of the R_5 calculation for CAL for Fictitious.

TABLE 103

R_5 Charge for Commercial Automobile Liability (CAL) Fictitious Insurance Company NAIC Risk-Based Capital 2011	
R_5 — Written Premium Risk	
Industry Average Loss and Loss Expense Ratio	0.679
Company Average Loss and Loss Expense Ratio	0.618
Company Average Loss Ratio/Industry Loss Ratio	0.910
Industry Loss & LAE Ratio	0.988
Company RBC Loss & LAE Ratio	0.944
Company Underwriting Expense Ratio	0.317
Net Written Premium	2,250,000
Adjustment for Investment Income	0.89
Net Written Premium RBC Before Discounts	353,610
Percent Loss-sensitive Direct NPW	0.008
Loss-sensitive Direct NPW Discount Factor	0.300
Loss-sensitive Discount for Direct NPW	849
Total NPW RBC	352,761

Excessive premium growth

The RBC average growth rate factor is calculated the same as that for reserve risk. The factor differs in its application however. In the case of R_5, the excessive growth charge is applied to net written premium rather than reserves and multiplied by 0.225, rather than 0.450. The net written premium is obtained from the total line in Part 1B, column 6, of the U&IE. The factor of 0.225 was determined by Kaufman based on a study of the loss ratio for companies experience growth in excess of 10% versus all companies in the industry. As with the 0.450 factor, the factor applied to net written premium of 0.225 has been adjusted for discounting by 0.90.

R_5 for Fictitious

Table 104 provides the R_5 portion of the calculation for Fictitious.

TABLE 104

R_5 Charge for Fictitious Insurance Company
NAIC Risk-Based Capital 2011

Fictitious Insurance Company					
Total R_0 Charge — Affiliated Insurance Co. Asset Risk					0
Total R_1 Charge — Fixed Income Asset Risk					553,398
Total R_2 Charge — Equity Asset Risk					4,303,948
Total R_3 Charge — Credit-Related Asset Risk					720,373
Total R_4 Charge — Underwriting Risk--Reserves					9,542,613
R_5 Calculation — Underwriting Risk — Net Written Premium	Amount Written	Charge Factor	Initial RBC Charge	Loss-sensitive Discount[185]	Final RBC Charge
Property/Casualty business					
Net Written Premium — HO / FO	4,555,000	0.1441	656,457	0	656,457
Net Written Premium — PPAL	2,804,000	0.2115	592,976	0	592,976
Net Written Premium — CAL	2,250,000	0.1572	353,610	849	352,761
Net Written Premium — WC	4,022,000	0.2030	816,402	13,471	802,931
Net Written Premium — CMP	4,677,000	0.1709	799,243	0	799,243
Net Written Premium — Med Mal Occurrence	0	0.0000	0	0	0
Net Written Premium — Med Mal CM	0	0.0000	0	0	0
Net Written Premium — Spec Liab	0	0.0000	0	0	0
Net Written Premium — OL	3,502,000	0.1999	700,092	630	699,462
Net Written Premium — Spec Prop	2,484,000	0.1805	448,439	0	448,439
Net Written Premium — APD	2,312,000	0.1715	396,462	0	396,462
Net Written Premium — F&S	146,000	0.1830	26,723	0	26,723
Net Written Premium — Other	0	0.0000	0	0	0
Net Written Premium — Products Liability	0	0.0000	0	0	0
Net Written Premium — All Other					
Total	26,752,000		4,790,404	14,950	4,775,454
Company premium concentration factor		0.7520			
Written Premium RBC after premium concentration					3,591,141
Excessive growth charge on net written premium	26,752,000	0.0000			0
Total R_5 Charge — Underwriting Risk — Net Written Premium					**3,591,141**

RBC MODEL ACT

Each state's statutes define a minimum amount of capital that a company must have to obtain a license in that state. These amounts vary by state and by lines of business but are usually relatively low, from $1 million to $5 million. These minimum capital amounts do not account for the characteristics and risk level of individual insurance companies.

The purpose of RBC is to help regulators identify insurers that are in financial trouble and that need regulatory attention. Therefore, the RBC requirements attempt to individualize

[185] We have assumed that the percentage of Fictitious' net written premium that emanates from loss-sensitive contracts written on a direct basis is: 0.8% for commercial automobile liability, 5.5% for workers' compensation, 0.3% for other liability, and 0% for all other lines and for loss-sensitive contracts written on an assumed basis.

minimum capital requirements for each insurer. RBC is not a target-level of capital that strong insurers should hold; rather, it computes a minimum level of capital adequacy that a company must have to operate.

The RBC is a dollar amount calculated from the NAIC RBC formula. The RBC that results from the formula is compared to a company's total adjusted capital. Total adjusted capital is equal to the company's policyholders' surplus from page 3 of the Annual Statement that is reduced by:

1. The amount of non-tabular discount from Schedule P, Part 1, Summary, columns 32 and 33.
2. Tabular discount on medical reserves included in Schedule P, Part 1, Summary, column 24.

Additionally, a property/casualty insurer that owns a life insurance company subsidiary adjusts its surplus for the same amounts that the life subsidiary does for RBC purposes, namely by adding the asset valuation reserve and 50% of the dividend liability to surplus.

RBC ratio is the name used in the insurance industry to describe the ratio of total adjusted capital to ACL. While discretionary, ACL is the point at which the insurance commissioner is authorized to take control over the company under the RBC Model Act. ACL is equal to 50% of the RBC value.

RBC ratio
= Total adjusted capital / ACL
= Total adjusted capital / (Total RBC after covariance * 0.50).

Regulatory action is permitted when total adjusted capital is within 50 percentage points of the ACL (i.e., when the RBC ratio is 150% or less). This is called the regulatory action level.

Table 105 summarizes the level of regulatory control relative to the percentage of adjusted capital to both the RBC and ACL benchmarks:

TABLE 105

Action Level	Adjusted capital as % of ACL Benchmark	Action Required if Inside Range	
		By State Insurance Department	By Company
1. Company action level	150% to 200%	None initially	Must submit a plan of action to the insurance commissioner of the domiciliary state explaining how the Company intends to obtain the needed capital or to reduce its operations or risks to meet the RBC standards.
2. Regulatory action level	100% to 150%	Commissioner has the right to take corrective action against the insurance company, such as by restricting new business. However, all action by the state insurance department is discretionary; nothing is mandated.	Must submit a plan of action to the insurance commissioner of the domiciliary state explaining how the Company intends to obtain the needed capital or to reduce its operations or risks to meet the RBC standards.
3. Authorized control level	70% to 100%	Regulatory action still discretionary, but the insurance commissioner is authorized to take control of the company.	None initially
4. Mandatory control level	Below 70%	Insurance commissioner of the domiciliary state must rehabilitate or liquidate the company.	None initially

As noted earlier, the detailed calculations of a company's risk charges are not available to the public. However, two metrics of RBC are disclosed in the Five-Year Historical Data exhibit of the Annual Statement: total adjusted capital and the ACL. A company's RBC ratio can be calculated by dividing the total adjusted capital by the ACL from the company's Five-Year Historical Data. Table 106 provides the RBC ratios for Fictitious from its 2011 Five-Year Historical Data exhibit.

TABLE 106

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
RBC Analysis	2011	2010	2009	2008	2007
28. Total adjusted capital	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
29. Authorized control level risk-based capital	5,552,000	6,097,300	5,854,000	5,685,000	6,517,000
Total adjusted capital as a percent of ACL (= line 28 / line 29)	559%	518%	611%	573%	530%

As displayed in Table 106, the company's RBC ratios have been well over 300 points above the company action level (ranging from 150% to 200% of ACL), the first action level within the RBC system.

As shown in the Actuarial Opinion Summary in the Appendix of this publication, Fictitious Insurance Company's range of reasonable reserve estimates is $43 million to $57 million with an actuarial central estimate of $50 million and carried reserves of $51.557 million. If the high end of the range was to materialize, adjusted capital would decrease by $5.443 million ($57 million - $51.557 million). At $25.581 million, the adjusted capital would still be well above the company action level of $11.776 million by $13.807 million. Some Appointed Actuaries look to the impact on capital resulting from a movement in reserves relative to the high end of the actuarial range for purposes of selecting a materiality standard (see *Chapter 16. Statement of Actuarial Opinion*).

According to the NAIC 2011 RBC instructions, 98.5% of property/casualty insurance companies fall within RBC levels that require no regulatory action (i.e., having total adjusted capital in excess of 200% of ACL).[186] However, just because a company's RBC results do not require regulatory attention from RBC does not mean that the company is strong financially. RBC is not meant to be the only tool used by regulators to evaluate financial solvency and therefore should not be used in isolation.

Here is the final calculation of NAIC RBC for Fictitious.

TABLE 107[187]

NAIC RBC 2011 Fictitious Insurance Company	
Total R_0 Charge — Affiliated Insurance Co. Asset Risk	0
Total R_1 Charge — Fixed Income Assets Risk	553,398
Total R_2 Charge — Equity Assets Risk	4,303,948
Total R_3 Charge — Credit-Related Asset Risk	720,373
Total R_4 Charge — Underwriting Risk-Reserves	9,542,613
Total R_5 Charge — Underwriting Risk-Net Written Premiums	3,591,141
Total required capital (= RBC after covariance)	11,104,365
Authorized control level RBC	5,552,182
Total adjusted capital	31,024,000
Ratio of adjusted capital to required capital	559%

TREND TEST

Companies with RBC ratios exceeding 200% are not necessarily free from regulatory attention. Companies having a RBC ratio of between 200% and 300% are subject to the trend

[186] NAIC, *RBC Property & Casualty 2011 Forecasting & Instructions,* page 43.

[187] Note that the authorized control level RBC of $5,552,182 is rounded to $5,552,000 in Table 12 and Table 70 for simplicity.

test. The trend test is an early warning of companies that may be on a path to incur an RBC ratio below 200%, thereby triggering the company action level. The test looks to see whether companies having a RBC ratio of between 200% and 300% also have a current year combined ratio that exceeds 120%. Companies meeting the trend test criteria are required to comply with the company action level requirements despite having a RBC ratio in excess of 200%.

The combined ratio is calculated as the sum of:

(1) Loss and LAE ratio
(2) Dividend ratio
(3) Expense ratio

The loss and LAE ratio is calculated as calendar year net incurred loss and LAE divided by net earned premium from the Statement of Income. The dividend ratio is equal to policyholders dividends divided by net earned premium from the Statement of Income. The expense ratio is equal to other underwriting expenses incurred plus aggregate write-ins for underwriting deductions from the Statement of Income divided by net written premiums from the U&IE.

THE FUTURE OF RBC

The NAIC is currently undertaking a comprehensive review of solvency regulation in the U.S. This review is known as the Solvency Modernization Initiative (SMI). One consideration with the SMI is the RBC approach to assessing the adequacy of a company's capital level. Going forward, RBC will be complemented with additional assessments that form part of the new Own Risk and Solvency Assessments (ORSA) that certain companies will be required to undertake (see *Chapter 25. Solvency II* for additional details).

The target of RBC has been to identify weakly capitalized companies and not necessarily to develop a specific universal capital level for all companies over a specified time horizon. The primary focus of targeting weakly capitalized companies will continue under SMI. The NAIC has indicated that a universal target capital level and/or specified time horizon across all business is not feasible. The NAIC believes these target levels should be different for type/line of business due to inherently different risks and credibility issues around developing distributions that make the validation of safety levels difficult.[188] Nonetheless, it is expected that some changes will be made with respect to RBC as part of the SMI process. The NAIC is currently considering the following with respect to the RBC process:[189]

- Documenting the development of RBC over the past 20 years to retain the institutional knowledge of the process, including the reasons for changes to the calculation over its history.

[188] NAIC, "Solvency Modernization Roadmap," August 31, 2012, http://www.naic.org/documents/committees_ex_isftf_smi_roadmap_120831.pdf, pages 2 and 3.
[189] Ibid.

- Evaluating enhancements to current risk charges, the relevance of certain risk charges and need for additional risk charges. Examples include the credit risk charge that is applied to reinsurance recoverables, the level of detail of the asset risk charge, and the inclusion of a catastrophe risk charge.
- Making the details of the RBC calculation for an insurance company public rather than retained solely by the insurer and its regulator(s).

Since its inception, the RBC model has evolved and these chapters have captured the detail of the calculation at a point in time. In the future the principles behind the calculation are unlikely to change substantially, although we are likely to see enhancements to the calculation through the SMI.

CHAPTER 20. IRIS RATIOS

OVERVIEW

National Association of Insurance Commissioners (NAIC) Insurance Regulatory Information System (IRIS) has been used since 1972 to help insurance regulators evaluate the financial condition of insurance companies. More than 5,000 companies file their financial statements with the NAIC each year.[190] IRIS is applied to property/casualty, life/accident and health, and fraternal insurance organizations.

IRIS is known by practicing actuaries as being a series of 13 tests of financial ratios relative to benchmarks (i.e., ranges of "unusual values"). These are called IRIS ratios. However, the IRIS ratios are only one component of IRIS. IRIS includes other tools and databases of financial information that are used by state insurance regulators to monitor the financial health of insurance companies. One such tool that may be less well known to actuaries is the NAIC Analyst Team System. The Analyst Team System relies on analysis of the results of IRIS ratios, as well as other financial solvency tools, to categorize those insurance companies requiring immediate regulatory attention.

The instructions for computing IRIS ratios are currently included as part of the CAS Exam 6 U.S. Syllabus of Basic Education. As a result, we will not go into all of the details of the calculations here but rather will provide a brief overview of the IRIS ratios and Analyst Team System. In Appendix I of this publication, we walk through the calculation and purpose of each of the 13 IRIS ratios, provide possible explanations for unusual values, and show the results of the IRIS ratio calculations for Fictitious Insurance Company using the 2011 Annual Statement.

IRIS RATIOS

The IRIS ratios are grouped into four categories:

- Overall ratios
- Profitability ratios
- Liquidity ratios
- Reserve ratios

Many of the ratios are computed in terms of policyholder surplus, with the intent of providing an early warning of companies in financial distress. The results of each of these ratios are not reviewed in isolation. When reviewing the results of ratios and investigating unusual values,

[190] Per the description of the publication *Ratio Results for the IRIS* on the NAIC and The Center for Insurance Policy and Research, NAIC Store, Financial Regulation Publication on IRIS, http://www.naic.org/store_pub_fin_receivership.htm#iris_results.

mitigating or augmenting circumstances brought to light through other ratios and information are considered.

The reserve ratios are probably the most important ratios to the property/casualty actuary and where the actuary places most attention, as these ratios are specifically commented on by the appointed actuary in the Statement of Actuarial Opinion (SAO).

There are three reserve ratios:

IRIS ratio 11: One-year reserve development to policyholders' surplus
IRIS ratio 12: Two-year reserve development to policyholders' surplus
IRIS ratio 13: Estimated current reserve deficiency to policyholders' surplus

These three ratios focus on the development of an insurance company's net loss and LAE reserves for purposes of understanding reserve adequacy. IRIS ratio 11 is the same one-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement. It measures development in the company's net loss and LAE reserves over the past year, whether adverse or favorable, relative to prior year surplus. Essentially, this test looks to see how much surplus would have been absorbed or enhanced in the prior year as a result of adverse or favorable development in the corresponding net loss and LAE reserves. Adverse development is shown as an increase to reserves and therefore a positive number. Results of IRIS ratio 11 equal to or greater than 20% are considered unusual.

IRIS ratio 12 is the same two-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement. It measures development in the company's net loss and LAE reserves over the past two years, relative to surplus at the end of the second prior year. Similar to ratio 11, results of test 12 equal to or greater than 20% are considered unusual.

IRIS ratio 13 is a hindsight test. It looks at a company's net outstanding loss and LAE reserves at the immediate prior two years relative to calendar year earned premium for those years and adds to the reserves development that has emerged over that period (one-year development for the immediate prior year; two-year development for the year prior to that). The test then applies the average of the resulting two "adjusted" loss ratios to earned premium for the recent year to determine what the outstanding loss reserve should be. A calculated deficiency in recorded loss and LAE reserves of 25% or more is deemed to be unusual.

The purpose of this test is to identify companies that may not have gotten their reserves "right" in the past. The expectation inherent in this test is if companies have had adverse development in the past, they will probably have adverse development in the future. Regulators want to see if companies who have had such adverse development have corrected for it in their current estimates.

ANALYST TEAM SYSTEM

The Analyst Team, which includes financial examiners and analysts from all four geographic zones of the NAIC, performs an analysis of the IRIS ratios, as well as other solvency monitoring tools such as RBC, to identify companies requiring immediate attention by regulatory authorities.

Based on the analysis results, the Analyst Team categorizes companies into three levels:[191]

1. Level A: companies requiring immediate attention and financial analysis by regulatory officials
2. Level B: companies possibly having adverse results but not requiring immediate attention
3. Reviewed, no level: companies deemed not to require specific attention by the regulators

The analysis results are merely a first step in identifying insurers requiring further investigation; they are not intended to be a comprehensive evaluation or opinion on the financial soundness or solvency of a company. Reports prepared by the team are confidential and are made available only to state insurance regulators.

INTERPRETING THE RESULTS OF THE SYSTEM

The IRIS results are used to prioritize insurers requiring further analysis through examination by the state insurance regulatory system. An unusual value does not necessarily mean that the insurer is financially impaired. The NAIC *IRIS Ratios Manual* states, "No state can rely on the tools' results as the state's only form of surveillance."[192]

[191] NAIC, *IRIS Ratios Manual,* 2011, page 2.
[192] Ibid., page 3.

PART V. FINANCIAL HEALTH OF PROPERTY/CASUALTY INSURANCE COMPANIES IN THE U.S.

INTRODUCTION TO PART V

In *Part IV. Statutory Filings to Accompany the Annual Statement* we presented details underlying several filings either included within or supplemental to the statutory Annual Statement. These and other tools, including on-site financial examinations and Financial Analysis Solvency Tools (FAST, of which the IRIS System is a part), provide a means for the regulator to monitor the financial health of an insurance company. Many of these tools are confidential. However, certain results can be derived from publicly available information, such as the result of RBC, which is included within the Five-Year Historical Data exhibit in the Annual Statement.

The monitoring performed by regulators is risk-based and intended to identify financially troubled companies well before they are impaired. Regulators use the tools collectively to evaluate financial health and prioritize those insurers requiring additional scrutiny and analysis.

While policyholders and investors place heavy reliance on state insurance regulators in monitoring the health of property/casualty insurance companies, they themselves have access to the publicly available tools, such as quarterly and Annual Statement filings, the Statement of Actuarial Opinion, and Securities and Exchange Commission filings (for publicly traded companies). Also to assess financial health, they rely on ratings and analyses performed by credit rating agencies, such as A.M. Best, Moody's, Standard & Poor's and Fitch. Each of these rating agencies uses internally developed capital adequacy models to perform qualitative and quantitative financial strength assessments and establish a company's rating.

In this section we provide a summary of the tools used by regulators and stakeholders monitoring an insurance company's financial health and briefly explain how these tools are used in practice.

CHAPTER 21. MEASUREMENT TOOLS

Before we discuss what the tools mentioned in the introduction do, it is important to disclose what they don't do.

First, each measurement tool provides one piece of evidence and should not be taken as the only evidence of a healthy or troubled insurance company. For example, an insurance company may have "usual" values for each of its Insurance Regulatory Information System (IRIS) ratios, but something about the company's exposures or a pending regulatory decision may result in a risk of material deviation in the company's reserves, and such risk could be material to the company surplus. The risk of material adverse deviation would be discussed in the Statement of Actuarial Opinion (SAO) by the appointed actuary, and in reading that disclosure, the regulator would determine the necessary steps for further investigation. In this example, neither the results of the IRIS ratios nor the SAO should be considered alone; other information should be incorporated into an evaluation of an insurance company's health.

Second, these tools don't supplant the audit of an insurance company. In fact, the audited financial statements are themselves a tool used by the stakeholders and regulators of an insurance company. Further, these tools will not ensure that the data used as input into the tools is accurate and complete, nor will they provide any insight as to whether the company's management has good internal management, systems and controls in place. However, weaknesses in company management, systems and/or controls eventually leach into the output from the tools.

Finally, these tools will not identify fraud, which can be difficult to uncover.

WAYS IN WHICH THESE TOOLS ARE USED TO MEASURE FINANCIAL HEALTH

When viewed together, these tools can provide valuable insight into the financial health of a property/casualty insurance company. The information gathered from one tool may not in itself be an indicator but may prompt additional investigation, either through the evaluation of other tools or inquiry of company management.

Further, the results from a single year may not immediately suggest financial impairment; however, a review of these results over several years may identify a trend in that direction. When reviewed together and across multiple years, these tools can be used to provide an early warning of companies that are of higher risk for financial impairment.

Annual and quarterly financial statements and schedules

Insurance companies are required to file financial statements every quarter. To summarize what we learned in preceding chapters, substantial detail is contained in the annual filing (i.e., as of December 31), including qualitative information in the form of detailed notes to financial statements and interrogatories. These statements are filed under Statutory Accounting Principles. As discussed, statutory accounting focuses on protecting the policyholder and therefore is known as maintaining more of a conservative stance relative to Generally Accepted Accounting Principles. Assets and liabilities tend to be measured on a basis that includes some cushion in the event of financial impairment.

There are two perspectives of financial health measured by the statutory financial statement: balance sheet strength and earnings potential. In terms of balance sheet strength, regulators are concerned with an insurance company's claim-paying ability and therefore focus on areas that could impair solvency. Two such areas are loss and loss adjustment expense (LAE) reserve and unearned premium reserve adequacy. Loss and LAE reserves make up the largest item on an insurance company's balance sheet, representing nearly 40% of total Liabilities, Surplus and Other Funds at year-end 2011 for the U.S. property/casualty insurance industry. Coupled with unearned premium reserves, these liabilities represent half of the 2011 balance sheet for all U.S. property/casualty insurers in aggregate.

The Five-Year Historical Data exhibit provides a historical view of how an insurance company's losses have developed over time. Additionally, the Notes to Financial Statements provide management discussion of changes in incurred loss and LAE. Data from Schedule P, Parts 2 through 4 can also be used to perform independent tests of a company's reserve adequacy.

Because loss reserves are stated on a net of reinsurance basis on the balance sheet, reinsurance collectibility is also an area of risk relative to the statutory financial statements. The provision for reinsurance is established on the liability side of the balance sheet to offset some of this risk by excluding a portion of reinsurance recoverables from unauthorized and overdue authorized reinsurers. Despite the establishment of the provision for reinsurance, reserve credit risk still exists. Notes to financial statements are a means to identify reinsurance that is unsecured, uncollectible or in dispute. And Schedule F, Part 3 can be used to identify the company's reinsurers so that additional review of the reinsurers' financial strength can be performed. For example, the credit rating of each reinsurer can be determined from recognized rating agencies, such as those mentioned later in this chapter.

Accident-year loss and LAE ratios from Schedule P, Part 1 provide insight into the adequacy of claim reserves and unearned premium reserves. For example, property/casualty actuaries look at current accident year incurred loss and LAE ratios by line of business relative to prior year ratios adjusted for rate change and trend. Deviations from anticipated trends are typically investigated to assess adequacy of loss and LAE ratios on the current accident years.

To illustrate, for a line of business experiencing loss trend of +5% and rate change of -3% on premiums earned in 2012 over 2011, one might initially expect the accident year 2012 loss and LAE ratio to be approximately 8% higher (= 1.05 / 0.97 - 1) than that for 2011. That is, if the accident year 2011 loss and LAE ratio was 60%, one would expect the accident year 2012 ratio to be 65% (60% * 1.08). If the loss and LAE recorded in Schedule P, Part 1, for accident year 2012 was 55%, one might question the rationale behind an improvement in loss ratio, when deterioration was expected.

Additionally, deficiencies in loss and LAE reserves or current accident-year loss and LAE ratios in excess of 100% lead to further investigation of whether the unearned premium is adequate to cover losses that will emerge as premium is earned. In performing such an investigation, consideration is often made for investment income.

In terms of the asset side of the balance sheet, property/casualty insurance companies tend to invest in short-duration, relatively liquid fixed-income investments. Nearly 60% of the assets held by U.S. property/casualty insurers at year-end 2011 were in bonds. However, the financial crisis in 2008 taught us that even conservative investment strategies can pose a risk to insurance companies. Changes in asset values and yields on invested assets are monitored to assess this risk.

Further, investment in asset classes where the level of risk exceeds industry norms stimulates investigation of the hedging strategies a company has in place to mitigate risk.

While a company's balance sheet may appear financially solid, future earnings can be impaired by a company's underwriting, pricing and investment strategy. Although the Annual Statement schedules and exhibits may not be able to uncover a weakening in earning strength on their surface, trends in financial ratios and other analysis of year-over-year changes in income statement line items can provide an early warning. Examples of such trends include:

- Rapid and substantial growth in written premium and the timing of such growth relative to the underwriting cycle: In soft markets it is difficult to achieve significant growth without concessions on price or commission levels. The Five-Year Historical Data provides historical premium volume on a gross and net basis to assist in measurement of a company's growth.

- Increases in underwriting (or other) expense ratios: This may also be a sign that an insurer is conceding commission to grow or maintain business. Increases in commissions or other expenses mean that there is less premium available to pay losses. The income statement and Part 3 of the Underwriting and Investment Exhibit (U&IE) and the Insurance Expense Exhibit (IEE) are sources of this data.

- Deteriorating loss ratios: Historical loss ratios can be observed on a calendar-year basis in the Five-Year Historical Data or by accident year and line of business in

Schedule P. Deterioration in loss ratios implies that pricing is not keeping pace with the underlying risk being underwritten. Further investigation into a company's price monitoring practices relative to peer benchmarks and ability to increase rates would be warranted.

- Increased exposure to catastrophic or large events: A review of writings by state in Schedule T and writings by line of business per the U&IE can help to identify catastrophe exposure. A company with premium concentration in Florida homeowners business suggests that the company may have increased exposure to hurricane risk. Further, a review of Part 2 of the general interrogatories provides information regarding a company's probable maximum loss and provisions in place to protect the company against such loss, such as a catastrophic reinsurance program.
- Losses on investments, change in mix of invested assets by class and/or declining yields on investment assets: Such trends may suggest a change in a company's investment strategy or lack of control in the strategy.
- Increases in the provision for reinsurance: Changes in the provision for reinsurance, as displayed in the capital and surplus account of the income statement, can be a sign of increased credit risk.

Quarterly statements provide more limited information than what is included in the annual filing. However the primary financial statements remain in the same general format (i.e., Assets page; Liabilities, Surplus and Other Funds; Statement of Income; Cash Flow; and Notes to Financial Statements), as do many of the schedules. The evaluation date is the quarter-end and comparisons are made to the prior year-end. From the perspective of a property/casualty actuary, the biggest difference is that quarterly statement does not include Schedule P. Schedule P is replaced with a schedule titled "Part 3," which shows loss and LAE reserve development during the quarter for the latest three accident years and all years prior, for all lines of business in the aggregate. While this schedule provides a gauge of retrospective reserve strength during the current year, it does not provide all of the line of business detail that is provided annually in Schedule P.

There is a wealth of information contained in the annual and quarterly statements. But because more than 5,000 companies file their statements, state regulators of insurance companies may not have the resources available to analyze these filings in detail for every company domiciled or licensed to write business in their state. Rather, regulators rely on the other tools coupled with the financial statements and schedules to prioritize those companies of greatest risk of financial impairment.

IRIS

As discussed in *Chapter 20. IRIS Ratios*, IRIS is one tool used by regulators. The IRIS ratios focus on balance sheet strength and the earnings quality through measures that assess growth, profitability, liquidity, and reserve development/adequacy.

Although the IRIS ratio results are not widely available to the public, they can be calculated directly from an insurance company's Annual Statement. We have done so for Fictitious in Appendix I of this publication.

While there is no direct link to regulatory intervention based on the results of these ratios, the National Association of Insurance Commissioners (NAIC) Analyst System Team reviews the results of the IRIS values in conjunction with other solvency monitoring tools, such as Risk-Based Capital (RBC), to prioritize those insurance companies requiring immediate regulatory attention.

RBC

RBC is another tool that considers balance sheet strength and future earnings. Balance sheet risk is considered in the asset reserve risk charges (R_0 through R_4), while profitability of future writings is contemplated through the written premium risk charge (R_5).

The calculations underlying an insurance company's RBC are confidential and cumbersome to perform without using the spreadsheet provided with the NAIC instructions. However, the results of the RBC formula are provided in the Five-Year Historical Data exhibit within the Annual Statement. Stakeholders are able to review overall results and monitor changes over time.

RBC considers the risks and relative size of an insurance company in computing a required level of capital, whereas under IRIS, no adjustments are made to reflect what would be "usual" for an individual insurance company. Unlike IRIS, there is a direct link to regulatory intervention based on a comparison of the RBC required capital to the company's adjusted capital. The NAIC RBC Model Act provides regulators with the authority to take control of a property/casualty insurance company if the company's RBC ratio falls below 100% of the ACL.

RBC isn't a fail-safe test for financial impairment. While certain of the RBC factors consider a company's own experience, the majority of the factors used to determine the level of required capital are based on industry-wide factors developed by the NAIC. As a result, while a company's RBC ratios may not require any specific action by the company management or regulatory authorities, this doesn't mean that the company is safe from future impairment.

The trend test is one way that the RBC results are used to identify companies that may become financially impaired. The purpose of the trend test is to identify companies likely to

fall in the company action level in the coming year and require those companies to take action before that happens. The trigger for application of company action within the trend test is having an RBC ratio within 100 points of the company action level, coupled with a current-year combined ratio of more than 120%.

SAO

The SAO provides assurance of a qualified actuary that the company's loss and LAE reserves are reasonable on a gross and net of reinsurance basis. It is not an opinion on the solvency of an insurance company but an opinion on the adequacy of what is typically the largest item on an insurance company's balance sheet. Significant deviations in this balance may have a material impact on a company's solvency. Therefore, the actuary will provide commentary of any significant uncertainties or risks that could result in a material adverse deviation in the company's recorded reserves.

A determination by the appointed actuary that the reserves are anything other than "reasonable" and relevant comments that indicate there is are significant risks and/or uncertainties that could result in material adverse deviation are two triggers of additional scrutiny by regulatory authorities.

One thing the SAO does not tell the reader is the company's reserve position within the appointed actuary's range, if the appointed actuary calculates a range. A company that is exposed to significant risks and uncertainties, with reserves lying at the lower bound of the actuary's range, would be subject to greater concern than a company exposed to the same level of risk with reserves in the high end of the appointed actuary's range. There is no document available for public review, which includes rating agencies, that contains the appointed actuary's range. The appointed actuary's range is contained in the Actuarial Opinion Summary (AOS), SAO documentation report, and usually found in the work papers of the company's external auditors.

As noted previously, the AOS is a confidential document, for regulators only. The actuarial report contains the range; however, these reports contain restrictions on distribution and use, due to their confidential nature, and therefore are not widely distributed. Similarly, while audit work papers may be subpoenaed for cause, they are not publicly available.

AOS

The AOS is valuable in providing the regulator with context as to the company's reserve adequacy by providing the company's position relative to the appointed actuary's point estimate or range, if calculated, on a net and gross of reinsurance basis. It also provides details that explain to the regulator the cause for adverse development in the company's reserves over the past five years, where such development has exceeded 5% of surplus in

three of those years. The AOS is also a confidential document that is only shared with the insurance company's state regulator.

Credit Rating Agencies

Stakeholders also rely on financial strength ratings (FSRs) issued by credit rating agencies (CRAs) in the evaluation of financial health. FSRs represent a CRA's evaluation of an insurance company's ability to meet ongoing obligations to its policyholders. This is in contrast to debt/issuer credit ratings, which are also provided by CRAs. Debt/issuer ratings represent the CRA's evaluation of a company's ability to meet debt obligations. Debt/issuer credit ratings are provided on the creditworthiness of the entity as a whole or on individual debt instruments.

Of the CRAs that rate insurance companies, A.M. Best is the only one that focuses exclusively on the insurance industry, providing FSRs and debt/issuer ratings. A.M. Best rates thousands of insurance entities across the globe. Other CRAs, such as Standard & Poor's (S&P), Moody's and Fitch serve a wide range of industries (ranging from aerospace to utilities, financial institutions and the public sector) and are prevalent in the area of debt/issuer ratings.[193]

Ratings are based on qualitative and quantitative analysis of a company's financial statements and organization. Each CRA uses its own criteria. Qualitative factors can include corporate governance, product development, composition of capital structure, asset quality, investment strategy, reserve adequacy, claims management, contingent assets and liabilities, and the level of reinsurance dependency. Quantitative analysis includes running a company's financial data through capital adequacy models. Each CRA has its own internally developed model that computes required capital levels. Similar to RBC, the required capital levels are computed and compared to an insurer's capital to produce a ratio that translates to letter ratings. Examples of CRA models include Best's Capital Adequacy Ratio and S&P's Capital Adequacy Ratio.

The higher the rating, the greater the ability the company is deemed to have to meet its ongoing insurance obligations. The ability to meet ongoing insurance obligations generally diminishes as ratings decrease. For example, A.M. Best's ratings include 15 letter grades ranging from A++ to F,[194] with "secure" ratings ranging from A++ (superior) to B+ (good) and "vulnerable" ratings ranging from B (fair) to F (in liquidation).[195] Regardless, the CRAs provide no guarantee that the insurance company will be able to meet its obligations.

[193] Per the Ratings tab within the Standard & Poor's Financial Services LLC website, http://www.standardandpoors.com/ratings/en/us/, titled *Browse Ratings by Practice*, (2012).

[194] Note there is a 16th rating of "S," which stands for an insurance company that has been suspended from writing.

[195] A.M. Best, Ratings & Criteria Center, *Best's Financial Strength Rating,* http://www.ambest.com/ratings/guide.asp, 2012.

FSR ratings are generally established annually, with ongoing monitoring performed by the CRA analyst throughout the year to evaluate the impact of developments on a company's rating. Ongoing monitoring includes review of the following:

- Statutory financial statement filings
- Interim management reports and other information provided by the insurer to the rating agency
- Significant public announcements, including earnings releases/calls, made by the entity

A rating action or review can be considered at any time that A.M. Best becomes aware of significant development in the insurer's operation.

The following provides examples of the uses of FSRs by stakeholders of insurance companies:

- Individual and corporate policyholders want to make sure the insurance company will be there when needed to pay claims. They therefore look to the FSR as an indicator in their insurance buying decisions, weighing the company's rating against the cost of insurance.
- Many boards of directors of corporate policyholders require that their organization's insurance purchases are made with highly rated insurance companies. And after the financial crisis, many large corporations required insurance companies to include cancellation endorsements to allow the insured to cancel without penalty if the carrier was downgraded below a certain level(s) by recognized CRAs.
- Insurance companies will also look at FSRs of reinsurers in making reinsurance buying decisions.
- Investors look at FSRs in their decision to invest in an insurance company, weighing risk relative to the company's rating with expected return.

HOW THESE TOOLS HAVE FARED — INDICATORS OF INSURANCE COMPANY INSOLVENCIES OVER THE PAST 40 YEARS

The measurement tools discussed in this publication are designed to assist in predicting or preventing all insurance company failures, but it is impossible for a tool to work in all circumstances. The intent, however, is that they identify the vast majority before it's too late.

Over the years, studies have been performed to detect the cause of insurance company failure and therefore sharpen the tools that are available to monitor solvency. The American Academy of Actuaries (AAA) has issued three such studies that, collectively, have examined property/casualty insurance company insolvencies over a 40-year period, from 1969 through 2009. The following contains the results of these studies and common themes observed in insolvent companies prior to their demise.

The AAA Property/Casualty Financial Soundness/Risk Management Committee (the FSRM) published a report in September 2010 titled *Property/Casualty Insurance Company Insolvencies*. This report revisited the issue of insurance company solvencies, which was examined in two previous studies in the 1990s by AAA, one based on property/casualty insurance company insolvencies over the period 1969 to 1987 and the other from 1988 to 1990. The AAA's research included submitting a questionnaire to insurance regulators on the causes of the insurance company failures over that time period. In each period, "under-reserving" and "mismanagement" were the first and second most frequently cited cause of insurance company insolvencies.

Given that the adequacy of loss reserves was historically cited as the primary cause of insolvency in the prior two studies, the 2010 report focused on the performance and characteristics of companies having the largest reserve deficiencies. Additionally, the FSRM studied five years' worth of historical financial data for 36 property/casualty insurance companies that became insolvent over the period 2005 to 2009 for commonalities. The 2010 report concluded the following:

- Insolvency is caused by a combination of factors. "Under-reserving" is a factor in the insolvency of property/casualty insurance companies but "is not the leading cause of insolvency." [196]
- Size, experience and diversification matters. "The majority of the companies was small, relatively new, and/or was concentrated in one line of business and/or state."[197]
- Good management and governance is essential. "The review of financial data for many of the companies showed evidence of poor management and decision-making, including little or no reinsurance, inadequate reinsurance for the amount of risk, very rapid premium growth, significant adverse development, inadequate pricing, and potentially serious data problems."[198]

The report also studied the SAO as an indicator of financial impairment over the immediate five years prior to insolvency. The FSRM concluded that the SAO alone is not a backstop for insurance company insolvencies, but it "can help identify those companies and/or categories of companies that could be in trouble."[199] Where opinions were available, the FSRM observed the following:

- Only one SAO was qualified, and the remaining were "reasonable" reserve opinions.

[196] American Academy of Actuaries Property/Casualty Financial Soundness/Risk Management Committee. *Property/Casualty Insurance Company Insolvencies,* September 2010, page 5.
[197] Ibid., page 16.
[198] Ibid.
[199] Ibid., page 18.

- Nearly 50% of the SAOs concluded that a risk of material adverse deviation existed in the company's loss and LAE reserves, 37% concluded that such a risk did not exist, and the remainder of the SAOs either did not comment on the risk of material adverse deviation or it wasn't clear if the appointed actuary deemed a risk of material adverse deviation existed.
- When stated, materiality standards were generally based on a percentage of surplus (between 5% and 20%).

We note that the NAIC *Actuarial Opinion Instructions* and Actuarial Standards of Practice issued by the Actuarial Standards Board have continued to include enhancements on disclosure requirements within the SAO since the period studied.

The commonalities identified in the above studies provide us with areas of focus when evaluating the tools used to measure financial health. The key message is that financial impairment is caused by a variety of factors, and the measurement tools discussed in this publication, when considered in unison, can help detect companies at risk for financial impairment.

PART VI. DIFFERENCES FROM STATUTORY TO OTHER FINANCIAL/REGULATORY REPORTING FRAMEWORKS IN THE U.S.

INTRODUCTION TO PART VI

As discussed in *Part III. SAP in the U.S.: Fundamental Aspects of the Annual Statement*, U.S. Statutory Accounting Principles (SAP) focuses on the solvency of insurance companies. Other financial reporting frameworks exist for solvency, general purpose financial reporting, and taxation. In this section we will examine these other frameworks, beginning with general purpose financial reporting.

The framework in the U.S. for general purpose financial reporting is U.S. Generally Accepted Accounting Principles (GAAP). We will focus on the key differences between U.S. SAP and U.S. GAAP. We will also study the importance of accounting for business combinations and consider calculations that involve actuaries in fair valuing the balance sheet. We will provide an overview of the emergence of International Financial Reporting Standards as an alternative general financial reporting framework, including the joint insurance contracts accounting project between the International Accounting Standards Board and the Financial Accounting Standards Board. We will provide a brief overview of the alternative statutory financial reporting standards under the European insurance regulations known as Solvency II. Finally, we will discuss financial reporting for tax purposes.

CHAPTER 22. U.S. GAAP[200], INCLUDING ADDITIONAL SEC REPORTING[201]

OVERVIEW

U.S. Generally Accepted Accounting Principles (GAAP) for public companies is, by statute, determined by the Securities and Exchange Commission (SEC). The SEC has effectively delegated this responsibility since its inception to the private sector. Currently, the SEC looks to the Financial Accounting Standards Board (FASB) as the organization for establishing standards of financial accounting. In 2009 the FASB codified U.S. GAAP by publishing its Accounting Standards Codification (ASC). The ASC replaced several sources of authoritative U.S. GAAP literature from various standard setters. These sources included:

1. FASB
    a. Statements (FAS)
    b. Interpretations (FIN)
    c. Technical Bulletins (FTB)
    d. Staff Positions (FSP)
    e. Staff Implementation Guides (Q&A)
    f. Statement No. 138 Examples.
2. Emerging Issues Task Force (EITF)
    a. Abstracts
    b. Topic D.
3. Derivative Implementation Group (DIG) Issues
4. Accounting Principles Board (APB) Opinions
5. Accounting Research Bulletins (ARB)
6. Accounting Interpretations (AIN)
7. American Institute of Certified Public Accountants (AICPA)
    a. Statements of Position (SOP)
    b. Audit and Accounting Guides (AAG) — only incremental accounting guidance
    c. Practice Bulletins (PB)
    d. Technical Inquiry Service (TIS) — only for Software Revenue Recognition

References to the newly codified standards usually start with the letters ASC followed by a series of numbers. Insurance specific guidance can be found in Section 944. For example, the definition of the measurement approach to unpaid claims estimates under U.S. GAAP can be found at ASC-944-40-30-1. It states: "The liability for unpaid claims shall be based on the estimated ultimate cost of settling the claims (including the effects of inflation and other societal and economical factors), using past experience adjusted for current trends, and any

[200] Aligns with IASA Chapter 14.
[201] Aligns with IASA Chapter 15.

other factors that would modify past experience." A free basic version of the ASC is available, after registering, at https://asc.fasb.org/.[202]

Historically, U.S. GAAP formed the foundation of U.S. Statutory Accounting Principles (SAP). From this foundation, U.S. SAP evolved over time (on a state by state basis), incorporating many modifications and exceptions to U.S. GAAP in the interest of establishing a more conservative accounting framework with a focus on solvency. In the 1990s, the National Association of Insurance Commissioners (NAIC) undertook a project (Codification) to consolidate the myriad state-based rules and exceptions to U.S. GAAP into a cohesive set of accounting principles. SAP still remains the prerogative of each individual state; however, Codification provides a consistent and comprehensive framework of accounting and reporting for each state insurance department to consider. As new pronouncements are made under U.S. GAAP, they are reviewed by the NAIC's Statutory Accounting Principles Working Group, which decides whether to adopt, reject or modify it for NAIC SAP. In turn each state, if it has adopted SAP, may accept what the NAIC has produced or adopt deviations or develop exceptions.

The fundamental difference between SAP and GAAP is driven by the intended user. SAP is intended for use by insurance regulators and is thus focused on an insurance company's ability to pay claims, emphasizing the adequacy of surplus in the balance sheet. This is sometimes viewed as conservative-leaning philosophy to provide an element of margin if the regulator would need one day to step in to settle all current liabilities while not writing any new business. GAAP is primarily intended for investors and creditors and has historically been focused on the measurement of earnings emergence, through the income statement, over a specified reporting period. Given the objective of SAP, it is not surprising that SAP is a conservative basis of accounting in comparison to GAAP.

There are many differences between U.S. GAAP and U.S. SAP, but we will focus on those that actuaries need to be familiar with:

- Deferred acquisition costs (DAC)
- Nonadmitted assets
- Deferred tax assets (DTAs)
- Invested assets
- Balance sheet presentation of reinsurance
- Ceded reinsurance — prospective and retroactive
- Structured settlements
- Anticipated subrogation and salvage
- Discounting of loss reserves
- Goodwill under purchase accounting

[202] FASB, *Accounting Standards Codification,* https://asc.fasb.org/, 2012.

Deferred Acquisition Costs

DAC is an asset that is established under GAAP to defer the recognition of acquisition expenses to match the recognition of earned premium. Beginning in 2012, the deferral of acquisition costs is limited to those direct costs (i.e., those which would not have been incurred if the contract had not been entered into) related to the successful acquisition or renewal of a contract. In addition, certain direct marketing advertising costs can be deferred under very limited circumstances. All other expenses, either direct or indirect, must be expensed as incurred.

Certain companies are permitted to limit the capitalization (use of an asset to defer expenditure) of DAC to those expenses they had been capitalizing prior to 2012 if they previously had not been capitalizing all expenses that met the definition of direct expenses related to the successful acquisition or renewal of insurance contracts. Capitalization of acquisition costs, through the establishment of a DAC asset, is not permitted under SAP. Therefore, all acquisition costs are expensed to current operations as incurred. This is keeping with the conservative philosophy of SAP.

NONADMITTED ASSETS

As discussed in *Part III. SAP in the U.S.: Fundamental Aspects of the Annual Statement*, SAP is focused on the ability of an insurance company to pay claims. To reflect that certain assets are not readily liquid, they are considered nonadmitted for purposes of determining the company's statutory surplus. One such example is furniture, fixtures and equipment.

For other asset categories, matters are more complicated as they may be partly admitted and partly nonadmitted. One such asset category is DTAs.

Deferred Tax Assets

Under U.S. GAAP and SAP, deferred taxes are established for temporary differences in the accounting and tax treatment of all assets and liabilities. For example, discounting of loss reserves for tax purposes but not for accounting purposes leads to a deferred tax asset. This is because you pay tax based on income (revenue minus expenses) under the tax accounting basis. If liabilities incurred are discounted for tax purposes, this leads to higher income, which produces more tax for the taxing authorities. But the discount on incurred losses will unwind over time and create an expense that will reduce future taxable income. Some or all of this reduction to future taxable income is what is recorded as a DTA.

The primary difference between U.S. GAAP and SAP is in the treatment of DTAs. For U.S. GAAP DTAs are fully recognized, and a valuation allowance is established if, based on the weight of evidence, it is more likely than not that the DTAs will not be realized. GAAP establishes a hierarchy of evidence to be considered. This is a subjective determination

requiring management to use significant judgment. Under SAP there is a strict admissibility test for all DTAs in addition to the establishment of a valuation allowance. This can lead to recognition of less DTAs in SAP basis financial statements. The admitted portion is calculated, since January 1, 2012, as:[203]

1. The amount of DTA expected to be reversed in the forthcoming year that can be applied to federal income taxes paid on profits in the prior three years, sometimes referred to as loss carrybacks.
2. The amount of DTA expected to reverse during a forthcoming period (beyond the initial year in item 1) limited to a percentage of surplus. The period and percentage of surplus is determined based on the company's ratio of total authorized capital (with some adjustments) to authorized control level (ACL) Risk-Based Capital (RBC) that was filed in the most recent calendar year. Different rules apply for non-RBC reporting entities such as mortgage guarantee insurers.
3. The amount of DTA beyond items 1 and 2 that can be offset against existing DTLs.

INVESTED ASSETS

Under SAP, investment-grade bonds and higher rated redeemable preferred stocks are held at amortized cost while below-investment-grade bonds and lower rated redeemable preferred stocks are held at the lower of amortized cost or fair value. All common stock and non-redeemable preferred stock are recorded at fair value. Changes in the carrying value of investments attributed to changes in fair value are recorded as direct changes in surplus.

The accounting treatment of investment-grade bonds appears to be inconsistent with the conservative philosophy of SAP. In the case of increasing interest rates, the market value of older bonds issued at a lower interest rate will decrease. Yet SAP allows for the asset to be carried at the higher amortized cost value. One possible explanation for this is that the difference is only temporary if the bond is held until maturity, as is typically done by most property/casualty insurers.

Under U.S. GAAP, financial instruments such as bonds and stocks are classified as Available For Sale (AFS), Held To Maturity (HTM) or Held For Trading (HFT). If a security is acquired with the intent of selling it within hours or days, the security is classified as HFT. However, at acquisition an entity is not precluded from classifying a security as HFT if it plans to hold it for a longer period. HFT assets are recorded at fair value with changes in fair value recorded in the income statement. Investments in debt securities are classified as HTM only if the reporting entity has the positive intent and ability to hold those securities to maturity. HTM assets are recorded at amortized cost. Investments in debt securities and equity securities that have readily determinable fair values not classified as HFT securities or as HTM securities

[203] This recent change is not reflected in the 2007 Feldblum taxation CAS Study Note.

are classified as available-for-sale securities. AFS securities, securities purchased with the intent to sell before maturity but after being held for at least one year, are recorded at fair value with changes in fair value in other comprehensive income (OCI), resulting in a direct change to the value of surplus, rather than changes in their fair value flowing through the regular income statement. Most property/casualty companies' financial instruments are classified and measured as AFS.

BALANCE SHEET PRESENTATION OF REINSURANCE

U.S. GAAP requires, due to limited rights to offset assets and liabilities, that liabilities be presented gross on the balance sheet with a separate asset for anticipated ceded reinsurance recoveries. U.S. SAP requires the balance sheet presentation of liabilities on page 3 of the Annual Statement to be presented net of reinsurance. Schedule P provides additional detail on the gross liabilities.

CEDED REINSURANCE — PROSPECTIVE AND RETROACTIVE

The accounting for reinsurance depends on whether the reinsurance contract covers future or past insured events. The latter is called retroactive reinsurance and the former prospective reinsurance. The difference between SAP and U.S. GAAP for prospective reinsurance is limited to balance sheet presentation. U.S. GAAP requires liabilities to be stated gross of reinsurance with a separate ceded reinsurance asset. SAP on the other hand presents liabilities net of reinsurance.

Retroactive reinsurance, however, has a different measurement approach for SAP compared to U.S. GAAP. SAP requires that undiscounted ceded reserves be recorded as a negative write-in liability. This leaves Schedule P unchanged, i.e., gross of the retroactive reinsurance. Any gain to the ceding company (excess of the negative write-in liability over the consideration paid for the reinsurance) is treated as write-in gain in other income and restricted as special surplus until the actual paid reinsurance recovery is in excess of the consideration paid.

U.S. GAAP requires ceded reserves to be recorded as a reinsurance asset. Any gain is deferred, thereby resulting in no immediate income or surplus benefit. The deferred gain is amortized using the interest method if the timing of the payments under the reinsurance treaty are reasonably estimable. Otherwise the proportion of actual recoveries to total estimated recoveries (the recovery method) determines the amount of amortization.

STRUCTURED SETTLEMENTS

To settle certain liability claims, an insurance company may purchase an annuity from a life insurance company with the beneficiary being the original claimant. For the case where a full release is signed by the claimant upon agreement to settle for the future annuity payments,

the GAAP and SAP treatments are the same. The purchase price of the annuity is recorded as a paid loss and the claim is closed.

In the situation where a full release is not provided to the insurance company by the claimant, the insurance company is still contingently liable. In this situation, U.S. GAAP treats the structured settlement like a reinsurance contract, thus retaining the loss reserve and establishing an equivalent reinsurance recoverable. The accounting under SAP is the same as for structured settlements where a release is obtained, but it requires that the insurance company disclose the amount of these contingent liabilities in the Notes to Financial Statements.

ANTICIPATED SALVAGE AND SUBROGATION

In Schedule P reserves can be stated either gross or net of anticipated salvage and subrogation. If the reserves are stated net, column 23 in Schedule P discloses the amount of anticipated salvage and subrogation. This election appears to be a residual effect of pre-codification standards where certain states required reserves to be stated gross of anticipated salvage and subrogation.

Under U.S. GAAP, estimated realizable salvage and subrogation is subtracted from the unpaid loss estimates.

DISCOUNTING OF LOSS RESERVES

Statement of Statutory Accounting Principles (SSAP) 65 indicates that except for certain workers compensation and long-term disability claims with fixed and reasonably determinable payments, property/casualty reserves cannot be discounted. For those reserves that are tabular based, SSAP 65 is silent on the permitted discount rate. Most state regulations are also silent, but typically 3.5% per annum is used. For non-tabular reserves SSAP 65 indicates that the discount rate should be determined in accordance with Actuarial Standard of Practice 20, but capped at the lesser of:

1. The company's net rate of return on statutory invested assets minus 1.5%
2. The current yield to maturity on a U.S. Treasury debt instrument with a duration that is consistent to the payment of the claims

U.S. GAAP ASC 944-40-S30-1 refers to an SEC staff bulletin that indicates it is permissible to apply the same discount calculated under SAP for U.S. GAAP purposes. It also indicates that an alternative discount rate could be used as long as the alternative rate "is reasonable on the facts and circumstances applicable to the registrant at the time the claims are settled." This staff bulletin was prepared in response to an inquiry from a registrant asking if it was permissible to discount for U.S. GAAP purposes based on the company's historical investment yield.

GOODWILL UNDER PURCHASE ACCOUNTING

Under SAP, a business combination is accounted for as either a statutory purchase or a statutory merger. Business combinations that create parent-subsidiary relationships are accounted for as a statutory purchase. Alternatively, transactions are accounted for as a statutory merger if equity of one entity is issued in exchange for equity of the second entity, with the equity in the second entity then canceled. Prospectively, only one entity exists. Under statutory purchase accounting, the assets and liabilities of the acquired entity are recorded at their historical SAP carrying values. Goodwill is calculated as the difference between the purchase price and the statutory surplus of the acquired entity. Goodwill is limited in the aggregate to 10% of the acquiring entity's capital and surplus (adjusted to exclude any goodwill, electronic data processing equipment and operating system software, and net DTAs) for its most recently filed Annual Statement. Goodwill is amortized to unrealized capital gains and losses over the period in which the acquiring entity benefits economically, not to exceed 10 years.

Under U.S. GAAP, all business combinations are accounted for using purchase accounting, which requires all assets and liabilities of the acquired entity to be recorded at fair value (including all identifiable intangible assets). Goodwill represents the difference between the purchase price and the fair value of the net assets of the acquired entity. Goodwill is not amortized but is evaluated for possible impairment on a regular basis.

Due to these different approaches in calculating goodwill, the initial amounts of goodwill under SAP and GAAP can be significantly different. *Chapter 23. Fair Value Under* Purchase *GAAP* will discuss further the concept of fair value in business combinations.

SEC REPORTING

Companies with publically traded securities are required to file quarterly (10-Q) and annual (10-K) financial reports with the SEC. In addition, companies are required to file a form 8-K on an ad hoc basis for material events as they occur. The triggering events requiring the filing of an 8-K include a change in the principal officers or directors of the company, a change in the company's certified accountant, and entering or terminating a material definitive agreement.

These filings provide investors with quantitative and qualitative information about a company's business and operations, allowing investors to make informed and timely decisions. The key contents by section of a 10-K are:

- Part I — Business description, risks factors, unresolved issues with SEC staff, properties, legal proceedings and matters subject to vote by shareholders
- Part II — Financial statements (including report of independent accountants), supplementary data, management's discussion and analysis of results, and controls and procedures

- Part III — Directors and officers of the company, executive compensation, securities ownership by certain beneficial owners and management, and the fees of principal accountant
- Part IV — Reports, exhibits and schedules from 8-Ks filed during the reporting period.

The 10-Q is an abbreviated form of the 10-K.

SEC reporting requirements for all registrants are mainly outlined in two regulations.

1. Regulation S-X — Form and Content of Financial Statements
2. Regulation S-K — Integrated Disclosure Rules

Regulation S-X contains general instructions to all companies around the composition and presentation of financial statements. Specifically, article seven provides detailed rules around the form and content of financial statement data and schedules of insurance companies. Many of these requirements are also required under GAAP. In particular, article seven requires the insurance company to state in the Notes to Financial Statements the:

- Basis of assumptions, including interest rates, for determining discounted liabilities
- Deferred acquisition costs amortized in the period
- Statutory stockholders equity and net income or loss

In addition Regulation S-X requires certain schedules to be included in each registrant's 10-K form (their annual filing). These schedules include:

- Schedule III — Supplementary insurance information for each reporting segment, of which the following is required to be reported:
    - Deferred policy acquisition costs
    - Unpaid loss and loss expenses
    - Unearned premiums
    - Other policy claims payable
    - Premium revenue
    - Net investment income
    - Losses and loss expenses
    - Amortization of deferred policy acquisition costs
    - Other operating expenses
    - Premiums written
- Schedule IV — Reinsurance including amounts ceded and assumed
- Schedule VI — Supplemental information concerning property/casualty insurance operations that includes the same information as Schedule III in total across fiscal years for the current fiscal year and the two years prior

Following are examples of Schedules III (Table 108), IV (Table 109) and VI (Table 110) from a 2011 10-K filing for a company we are calling "Fictional Insurance Company".

TABLE 108

10-K Schedule III
Fictional Insurance Company
Supplementary Insurance Information
2009—2011
($ in millions)

Segment	Deferred Acquisition Costs	Claims and Claim Adjustment Expense Reserves	Unearned Premiums	Earned Premiums	Net Investment Income (1)	Claims and Claim Adjustment Expenses	Amortization of Deferred Acquisition Costs	Other Operating Expenses (2)	Net Written Premiums
2011									
Business Insurance	430	21,132	2,887	5,965	1,075	448	956	1,024	5,972
Financial, Professional and International Insurance	175	3,611	1,076	1,671	218	783	318	341	1,633
Personal Insurance	336	2,300	1,884	3,996	223	3,340	768	478	4,078
Total – Reportable Segments	940	27,042	5,846	11,632	1,516	8,571	2,041	1,843	11,684
Other	-	35	-	-	-	-	-	233	-
Consolidated	940	27,077	5,846	11,632	1,516	8,571	2,041	2,076	11,684
2010									
Business Insurance	424	21,231	2,825	5,669	1,135	3,425	921	1,003	5,717
Financial, Professional and International Insurance	185	3,686	1,126	1,747	231	895	322	320	1,691
Personal Insurance	329	2,222	1,800	3,870	244	2,636	759	457	3,985
Total – Reportable Segments	938	27,139	5,751	11,286	1,611	6,956	2,002	1,779	11,393
Other	-	36	-	-	-	-	-	219	-
Consolidated	938	27,175	5,751	11,286	1,611	6,956	2,002	1,998	11,393
2009									
Business Insurance	417	22,171	2,833	5,776	1,002	3,179	935	1,035	5,741
Financial, Professional and International Insurance	194	3,790	1,199	1,755	238	920	328	305	1,730
Personal Insurance	315	2,227	1,688	3,748	222	2,435	746	413	3,765
Total – Reportable Segments	926	28,188	5,719	11,279	1,462	6,534	2,008	1,753	11,235
Other	-	38	-	-	-	-	-	221	-
Consolidated	926	28,226	5,719	11,279	1,462	6,534	2,008	1,974	11,235

(1) See note 2 to the consolidated financial statements for discussion of the method used to allocate net investment income and invested assets to the identified segments.
(2) Expense allocations are determined in accordance with prescribed statutory accounting practices. These practices make a reasonable allocation of all expenses to those product lines with which they are associated.

TABLE 109

10-K Schedule IV
Fictional Insurance Company
Valuation and Qualifying Accounts
(USD in millions)

	Balance beginning of period	Charged to costs and expenses	Charged to other accounts (1)	Deductions (2)	Balance at end of period
2011					
Reinsurance recoverables	191	-	-	9	182
Allowance for uncollectible:					
Premiums receivable from underwriting activities	61	12	-	29	44
Deductions	19	3	-	2	21
2010					
Reinsurance recoverables	275	-	-	84	191
Allowance for uncollectible:					
Premiums receivable from underwriting activities	68	24	(1)	31	61
Deductions	26	(4)	-	2	19
2009					
Reinsurance recoverables	325	-	-	50	275
Allowance for uncollectible:					
premiums receivable from underwriting activities	68	32	1	33	68
Deductions	35	(2)	-	7	26

(1) Charged to claims and claim adjustment expenses in the consolidated statement of income.
(2) Credited to the related asset account.

TABLE 110

10-K Schedule VI
Fictional Insurance Company
Supplementary Information Concerning Property-Casualty Insurance Operations (1)
2009–2011
(USD in millions)

Affiliation with Registrant (2)	Deferred Acquisition Costs	Claims and Claim Adjustment Expense Reserves	Discount From Reserves for Unpaid Claims (3)	Unearned Premiums	Earned Premiums	Net Investment Income	Claims and Claim Adjustment Expenses Incurred Related to:		Amortization of Deferred Acquisition Costs	Paid Claims and Claims and Adjustment Expenses	Net Written Premiums
							Current Year	Prior Year			
2011	940	27,042	629	5,846	11,632	1,516	8,919	(443)	2,041	8,112	11,684
2010	938	27,139	626	5,751	11,286	1,611	7,610	(746)	2,002	7,213	11,393
2009	926	28,188	612	5,719	11,279	1,462	7,204	(763)	2,008	6,803	11,235

(1) Excludes accident and health insurance business.
(2) Consolidated property/casualty insurance operations.
(3) For a discussion of types of reserves discounted and discount rates used, see Item 1, Business, Discounting.

Regulation S-K contains the requirements for the nonfinancial statement portions of the 10-K filing. In conjunction with the Securities Act Industry Guides, Guide 6: Disclosures Concerning Unpaid Claims and Claim Adjustment Expenses of Property-Casualty Insurance Underwriters, the following items are required to be disclosed:

- A tabular analysis of changes in aggregate reserves for unpaid claims and claim adjustment expenses for each of the latest three one-year periods
- A 10-year loss reserve development table (detail discussed below and shown in Table 112)
- Method for estimating the effects of inflation, implicitly or explicitly
- A reconciliation between statutory and GAAP reserves for unpaid claims and claim adjustment expenses, including an explanation of the key differences
- The amount of discount embedded in the GAAP reserves for unpaid claims, including the pre-tax income effect of discount accrued and of discount amortized

The two most commonly referred to tables are changes in aggregate reserves and the 10-year reserve runoff table.

TABLE 111

10-K Notes to Consolidated Financial Statements Fictional Insurance Company Insurance Claim Reserves Reconciliation of beginning and ending property casualty reserve balances for claims and claim adjustment expenses (USD in millions)			
At and for the year ending December 31	2011	2010	2009
Claims and claim adjustment expense reserves at beginning of year	27,139	28,188	29,026
Less reinsurance recoverables on unpaid losses	5,941	6,629	7,272
Net reserves at beginning of year	21,198	21,559	21,755
Estimated claims and claim adjustment expenses for claims arising in the current year	8,919	7,610	7,204
Estimated decrease in claims and claim adjustment expenses for claims arising in prior years	(443)	(746)	(763)
Total increases	8,476	6,864	6,441
Claims and claim adjustment expense payments for claims arising in:			
Current year	4,082	3,133	2,843
Prior years	4,030	4,080	3,959
Total payments	8,112	7,213	6,803
Unrealized foreign exchange (gain) loss	(14)	(13)	166
Net reserves at end of year	21,548	21,198	21,559
Plus reinsurance recoverables on unpaid losses	5,494	5,941	6,629
Claims and claim adjustment expense reserves at end of year	27,042	27,139	28,188

Table 111 shows for each of the last three years the beginning reserve from the prior year-end, the provision for reserve development in the calendar year (ultimate incurred losses from accidents occurring in the current year plus change in ultimate incurred losses on accidents from prior fiscal periods), paid losses and the ending reserve. The beginning reserve plus the provision for reserve development minus paid losses equals the ending reserve. If the company makes an acquisition, this would be reflected in the beginning reserve balance.

The 10-year loss reserve development table shows the runoff of management's best estimate of the required reserve from each year-end for the last 10 years.

TABLE 112

10-K
Fictional Insurance Company
10-Year Loss Development Table

(at December 31, in millions)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Reserves for claims and claim adjustment expense originally estimated	10,636	12,253	12,667	21,825	22,588	22,561	22,695	21,755	21,559	21,198	21,548
Cumulative amounts paid as of:											
One year later	2,642	2,722	2,449	4,671	4,546	3,906	4,290	3,959	4,080	4,030	
Two years later	4,605	4,381	4,574	7,723	7,286	6,941	6,739	6,558	6,516		
Three years later	5,871	5,957	6,077	9,865	9,724	8,712	8,565	8,251			
Four years later	7,057	7,134	7,219	11,856	11,072	10,065	9,755				
Five years later	7,959	8,019	8,201	12,939	12,107	10,964					
Six years later	8,675	8,866	8,754	13,791	12,861						
Seven years later	9,414	9,341	9,246	14,465							
Eight years later	9,827	9,775	9,647								
Nine years later	10,224	10,130									
Ten years later	10,552										
Reserves re-estimated as of:											
One year later	12,232	12,458	12,755	21,962	22,362	22,207	21,787	20,992	20,813	20,755	
Two years later	12,682	12,950	13,308	22,414	22,281	21,504	21,024	20,348	20,232		
Three years later	13,197	13,456	13,714	22,612	21,955	20,926	20,454	19,807			
Four years later	13,667	13,843	13,955	22,721	21,514	20,397	20,128				
Five years later	14,044	14,076	14,114	22,462	21,077	20,226					
Six years later	14,312	14,247	14,017	22,153	20,984						
Seven years later	14,511	14,230	13,872	22,127							
Eight years later	14,523	14,121	13,893								
Nine years later	14,479	14,171									
Ten years later	14,537										
Cumulative deficiency (redundancy) (a)(b)	3,901	1,918	1,225	302	(1,604)	(2,335)	(2,567)	(1,948)	(1,327)	(443)	
Gross liability – end of year	16,273	17,859	18,304	31,300	32,365	31,425	30,592	29,026	28,188	27,139	27,042
Reinsurance recoverables	5,638	5,606	5,637	9,474	9,777	8,864	7,897	7,272	6,629	5,941	5,494
Net liability-end of year	10,636	12,253	12,667	21,825	22,588	22,561	22,695	21,755	21,559	21,198	21,548
Gross re-estimated liability – latest	21,247	20,480	19,734	31,521	30,469	28,440	27,459	26,452	26,363	26,470	
Re-estimated reinsurance recoverable – latest	6,710	6,309	5,841	9,394	9,484	8,214	7,331	6,646	6,131	5,716	
Net re-estimated liability – latest	14,537	14,171	13,893	22,127	20,984	20,226	20,128	19,807	20,232	20,755	
Gross cumulative deficiency (redundancy)	4,974	2,621	1,430	222	(1,896)	(2,985)	(3,133)	(2,574)	(1,825)	(669)	

Each column in the table is for a particular year-end. The first row shows the total net reserves for each year-end. The first triangle shows, going down each column, the cumulative (since the year-end in question) paid losses at successive periods on all accidents occurring on or before the specific year-end in question. The second triangle shows, in each column, management's best re-estimate of reserves at successive periods for all accidents occurring on or before the specific year-end in question with the hindsight of the paid losses from the first triangle. At the bottom of the table is a summary that provides the total reserve development down the column (basically the development to date by subtracting the last number in each column of the second triangle from the first number). By reviewing the total reserve development, either nominally or as a percentage of the starting reserve, users of the financial statement can evaluate management's past judgment in setting reserves. Critics of the usefulness of this table point out that management or their reserve setting process may

not have been consistent over the time period shown by the table, and it is distorted by the market cycles. Therefore, they believe the table to be of limited use.

To demonstrate how a loss development table is constructed we have used the Schedule P, Part 2 and Part 3 summaries for Fictitious. To construct the table, we have assumed that the company started writing business in accident year 2002 and that there are no statutory to GAAP accounting adjustments. Furthermore, we included only net loss and DCC expenses.

The 2002 column is therefore only accident year 2002 with the original reserve being the accident year 2002 reserve at December 31, 2002. The cumulative paid amounts show the respective amounts paid after December 31, 2002. After nine years the table tells us that accident year 2002 has run off favorably by $862 million, which can easily be reconciled to the change in ultimates in Schedule P, Part 2. The original reserve in the second column, 2003, is the sum of accident year 2002 and 2003 reserves at December 31, 2003, or at 24 months and 12 months, respectively. The 2003 column in the first triangle then shows the cumulative payments on those accident years since December 31, 2003.

TABLE 113

Building from Schedule P
Fictional Insurance Company
10-Year Loss Development Table

(at December 31, in millions)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Net reserves for claims and claim adjustment expense originally estimated	10,368	16,785	23,462	28,062	28,689	30,315	31,359	31,903	32,708	34,515
Cumulative amounts paid as of:										
One year later	2,756	4,648	6,145	6,815	6,286	6,406	7,191	7,575	7,845	
Two years later	4,416	7,873	9,687	10,679	9,958	10,358	11,652	11,924		
Three years later	5,739	10,011	12,296	13,083	12,414	13,113	14,409			
Four years later	6,746	11,566	13,838	14,634	14,144	14,711				
Five years later	7,408	12,480	14,826	15,686	15,085					
Six years later	7,805	13,050	15,483	16,304						
Seven years later	8,080	13,420	15,906							
Eight years later	8,227	13,682								
Nine years later	8,321									
Ten years later										
Reserves re-estimated as of:										
One year later	9,228	16,438	22,601	26,211	27,254	27,811	29,803	30,589	31,656	
Two years later	9,664	17,045	21,999	25,226	25,059	26,129	28,555	29,164		
Three years later	9,882	17,078	21,552	23,712	23,703	24,972	27,236			
Four years later	9,961	17,052	21,023	22,670	22,584	24,033				
Five years later	9,897	17,006	20,423	21,770	22,015					
Six years later	9,841	16,647	19,846	21,359						
Seven years later	9,776	16,267	19,559							
Eight years later	9,527	16,169								
Nine years later	9,506									
Ten years later										
Cumulative deficiency (redundancy) (a)(b)	(862)	(616)	(3,903)	(6,703)	(6,674)	(6,282)	(4,123)	(2,739)	(1,052)	

CHAPTER 23. FAIR VALUE UNDER PURCHASE GAAP

When an entity agrees to buy another entity, under U.S. Generally Accepted Accounting Principles (GAAP) the purchaser is required to state at fair value the assets and liabilities of the purchased entity. This accounting for business combinations is often referred to as Purchase GAAP (P-GAAP). As part of the P-GAAP process, certain intangible assets are included that would not typically be recognized and measured under U.S. GAAP. After the fair value of the assets and liabilities is determined, the implied capital (fair value assets minus fair value liabilities) is compared to the purchase price. If the implied capital is less than the purchase price of the purchased entity, the difference is defined to be goodwill and an asset equivalent to that amount is established. If the implied capital is greater than the purchase price of the purchased entity, the difference is immediately recognized as an operating gain into income.

As actuaries we may become involved in the estimation of certain balance sheet items on a fair value basis. In particular we may be asked to estimate the fair value of loss and LAE reserves and to estimate the value of business acquired (VOBA).

FAIR VALUE OF LOSS AND LAE RESERVES

Fair value under U.S. GAAP is defined in Accounting Standards Codification (ASC) 820-10-05 as "the price at which an orderly transaction to sell the asset or to transfer the liability would take place between market participants at the measurement date under current market conditions." Such a value could be obtained by a market quote if there were a deep and liquid market for insurance liabilities. As there is no such market, the approach is "mark-to-model," which entails determining the market value through an estimation process rather than using an observable market price. Recent actuarial literature supports an approach to estimating fair value of insurance liabilities based on three components. These components are:

1. The expected value of the nominal future cash flows related to liabilities incurred, for loss and LAE, as of the date of the transaction.
2. The reduction in those cash flows for the time value of money at a risk-free rate plus an element for the illiquid nature of the liabilities. This discount rate is meant to reflect the characteristics of the underlying liabilities.
3. A risk adjustment to compensate an investor for bearing the risk associated with the liabilities. This is meant to reflect the expected net present value of profit that an investor would demand in return for the risk inherent within the liabilities.

We will separately consider each in our example below, basing the expected value of the cash flows on what we deem to be a reasonable estimate of unpaid claims as of the sale date and the associated future payout pattern (first component), and the current risk-free rate matched to the duration of those liabilities plus an adjustment for illiquidity (second

component). For the third component of fair value, the risk adjustment, we use what is commonly referred to as the "cost of capital approach." This approach estimates the amount of capital required to support the reserves at each future evaluation date. The required return in excess of the risk-free rate plus illiquidity adjustment is applied to this amount to calculate the value of the excess return expected by the investor in that future period. These values are in turn discounted to present value. The sum of the present value of excess returns from each future period is considered the risk margin.

The first component, expected nominal cash flows, can be derived from the current recorded reserve if management's best estimate is indeed an expected value that has no obvious inherent bias. There are two common ways to establish the cash flows by line of business from the nominal reserves. The first is to use the payout pattern based on the loss reserve development that the actuary would have selected in the course of his or her review of the reasonableness of management's recorded reserve. The second approach is to utilize the implied pattern based on the ratios of paid loss to ultimate loss by accident year. This latter approach may require more smoothing depending on the methods used in selecting ultimate losses and the stability, yet decreasing values, of incurred but not reported (IBNR) to case reserve ratios.

The second component is the amount of discount. Once the cash flows are estimated, the discounting calculation is fairly straightforward provided the rate is given. Given the third component is an explicit risk margin, the interest rate should reflect only the characteristics of the liability not related to the underlying risk in the outcomes for the purchasing entity. This is effectively the risk-free rate plus an element for the illiquidity of the liability, typically less than 100 basis points.

The risk-free rates are typically observed by referring the U.S. Treasury Daily Yield Curve for the evaluation date of study, for liabilities settled in U.S. dollars. The liquidity/illiquidity premium (the terms "liquidity" and "illiquidity" are used interchangeably) is not readily available or typically understood. The need for an illiquidity premium is much easier to initially comprehend when considered from an asset perspective. Two assets with identical expected cash flows and no difference in the risk associated with those cash flows would be expected to be valued exactly the same. But what if one was publically listed and readily tradable, while the other is privately held? In this situation the ability to readily trade the asset would result in a lower discount rate being applied to the tradable asset's future cash flows than that of the privately held asset. The difference in the discount rates is the illiquidity premium for the privately held asset.

From a liability perspective, many find it hard to fathom why a liability that is less liquid should be lower in value than a liability that is liquid. It is easier to understand by considering the asset transferred to support the liability by the seller. The less liquid the liability is, the greater the opportunity for the purchaser of the liability to utilize the asset for their own gain

until the liability comes due. This opportunity cost results in a greater discount for the seller of the liability, i.e., a higher discount rate. How to derive the illiquidity premium is an active debate at the time of writing and beyond the scope of this study material.

The third and final component of the fair value of the loss reserves is the risk adjustment. The most logical approach to calculating a risk adjustment for an estimate that is meant to represent a market-based valuation is a cost of capital. The cost of capital approach is simply the present value of the future returns on capital that an investor would require for bearing the risk in the expected cash flows. The basic formula for the risk adjustment is:

$$\text{Risk adjustment} = (R - i)\sum_{t=0}^{\infty}\frac{C_{t\,to\,t+1}}{(1+i)^{t+1}}$$

Where:

- R = pretax required return on capital by the capital provider
- i = risk-free rate of return plus an illiquidity premium
- t = time
- $C_{t\text{ to }t+1}$ = average capital carried over time t and t+1 to support the liability

The pretax required return can be approximated from the post-tax weighted average cost of capital that is typically produced by valuation experts performing the P-GAAP work on other intangible assets. The capital at any time t could be derived from using a suitable benchmark of the required capital for hypothetical market participant based on Risk-Based Capital, S&P's capital model or Best's Capital Adequacy Ratio model.

As an example, we shall calculate the fair value of the loss and loss adjustment expense (LAE) reserves for the homeowners/farmowners line of business from Fictitious' Annual Statement. In performing the calculation, we have assumed the following:

- The recorded reserve of $1.457 million is a mean estimate of the expected future cash flows, i.e., no margin is present in management's best estimate.
- The appropriate payout pattern of the loss reserves, with some slight smoothing, can be derived from the ultimates in each accident year divided by the paid losses in each accident year[204].
- The discount rates are the U.S. Treasury yield curve as of the valuation date plus an adjustment of 35 basis points for the illiquidity premium.
- The payments are made halfway through each future period.

[204] Note the term "payout pattern" is used interchangeably by actuaries as either the ratio of paid losses to ultimate loss ("percent paid") or the ratio of ultimate loss to paid loss (which is equivalent to a paid age-to-ultimate factor).

- The required capital ratio is 20.1% of the unpaid claim estimates in each future period and is applied to the average amount outstanding over the period to estimate the required capital.
- The cost of capital is 10%, which is reduced by the discount rate associated with the average duration of capital to derive the risk cost of capital of 9.7%, (R-i) in the above formula.
- The return on capital is paid at the end of each future period.

TABLE 114

Fictitious Insurance Company
Homeowners/Farmowners
Fair Value of Loss and LAE Reserves — Net
As of December 31, 2011
(U.S.D in 000s)

			Anticipated Loss Payments By Payment Period									
		Total	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Payments in Period	(1)	1,457	879	261	104	112	38	27	7	8	9	11
Payment Duration	(2)		0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5
Discount Rate	(3)		0.095%	0.210%	0.336%	0.481%	0.711%	0.973%	1.231%	1.463%	1.633%	1.822%
PV of Payment	(4)	1,446	878	260	104	110	37	25	7	7	8	10
Undiscounted Future Payments	(5)		1,457	578	317	213	101	62	36	29	21	11
Required Capital Ratio	(6)		0.201	0.201	0.201	0.201	0.201	0.201	0.201	0.201	0.201	0.201
Average Required Capital	(7)		205	90	53	32	16	10	7	5	3	1
Risk Cost of Capital	(8)		0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097
Cost of Capital in Period	(9)		20	9	5	3	2	1	1	0	0	0
Duration (10)			1	2	3	4	5	6	7	8	9	10
Discount Rate	(11)		0.155%	0.285%	0.395%	0.585%	0.865%	1.095%	1.385%	1.546%	1.725%	1.925%
Associated Risk Margin	(12)	40	20	9	5	3	2	1	1	0	0	0
Total Fair Value Reserve	(13)	1,486										

(1) Determined from reserve and payout pattern
(2) Payments assumed to occur on average halfway through the period
(3) From yield curve
(4) = (1) / [1 + (3)] ^ (2)
(5) Sum of remaining amounts from (1)
(6) Selected
(7) = Average of (5) from t and t+1 x (6)
(8) Selected
(9) = (7) x (8)
(10) Capital is assumed to be held until the end of the period
(11) From yield curve
(12) = (9) / [1 + (11)] ^ (10)
(11) = Total (4) + Total (12)

The resulting fair value for this line of business differs only slightly from the recorded reserve and is likely within the bounds of the level of accuracy for determining a reasonable reserve estimate. However, this is due to several factors, some of which are offsetting. The discount

is minimal in this case due to the relatively short payout pattern of the line of business and the low level of interest rates on U.S. treasuries as of December 31, 2011.

The shorter payout pattern also affects how long you need to hold the capital. The less time the capital is held, the lower the future capital charges that can accumulate. In addition, in this case the line of business is not one that is associated with a large degree of reserve variability. Therefore, the required capital ratio is fairly small, which decreases the absolute return that a third party would demand to acquire the liability. Finally, working in the opposite direction, there is the effect of discount rates on the risk margin. The low discount rates effectively increase the risk margin as the present value of the future returns on capital is higher.

In this example, you can see that the fair value of a liability can be affected by many moving pieces that can require an actuary to dig into the calculation to be able to explain differences between lines of business or between evaluation dates.

Not all believe that cost of capital is the right approach to producing a risk adjustment. Australian Prudential Regulation Authority requires reserves to be recorded at or about the 75th percentile of the discounted distribution of outcomes. In Canada, property/casualty actuaries judgmentally select the risk adjustment for loss reserves as a percentage value up to 20%. In addition, one could use tail value at risk (T-VaR) approach. While the cost of capital can be calibrated to the pre-tax return investors require and the amounts of capital typically held for a risk, these other methods lack any calibration to the market. This makes it difficult to assert that the assumption of a certain confidence level, T-VaR or percentage load is required by a market participant in an arm's-length transaction.

VALUE OF IN-FORCE

Under P-GAAP, the fair value of deferred acquisition costs (DAC) is zero. In its place an asset is established based on the value of the business in-force (VBIF). This is not, as some company's assume, equivalent to the DAC asset. The VBIF is affected by the relationship of discount to risk adjustment on the liabilities expected to be incurred in connection with the unearned premium reserves, the amount of acquisition costs that were covered by the premium but previously expensed, and the estimated profitability of the unearned premium reserves. A shortcut technique to calculating the VBIF is to state at fair value the liabilities expected to be incurred in connection with the unearned premium reserves and subtract them from the unearned premium to obtain the implied VBIF. The steps to obtain a fair value of these liabilities are identical to those in obtaining the fair value of the loss reserves but with two additional steps. The expected and unbiased loss ratio is required to estimate the nominal expected liabilities from the unearned premium, and the cash flows in the first year should include an amount for policy maintenance costs.

CHAPTER 24. INTERNATIONAL FINANCIAL REPORTING STANDARDS

International Financial Reporting Standards (IFRS) is a single set of global financial reporting standards issued by the International Accounting Standards Board (IASB). It was developed in the public interest as a high-quality set of general purpose standards that will provide users across borders and industries with transparent and comparable information. That is, they provide the world's integrated capital markets with a common language for financial reporting.

Most of the world's major economies permit or require the use of IFRS. The European Union, Canada, Hong Kong, and Australia are among the economies that use IFRS. At the time of writing, the Securities and Exchange Commission (SEC) in the U.S. is in the process of determining whether to allow domestic issuers of financial statements the ability to file using IFRS rather than U.S. Generally Accepted Accounting Principles (GAAP), as it currently permits foreign private issuers. It appears that the SEC will not endorse such a move but will likely allow U.S. GAAP to converge with IFRS over time by using the Financial Accounting Standards Board (FASB) to accept, modify, or reject new standards issued by the IASB in a similar manner to how the National Association of Insurance Commissioners (NAIC) Statutory Accounting Principles Working Group decides how changes in U.S. GAAP will affect U.S. Statutory Accounting Principles.

Currently the IASB and the FASB are engaged in a joint project to develop a new accounting standard for insurance contracts. The initial project was started by the predecessor of the IASB, the International Accounting Standards Committee in the late 1990s. There were several reasons for starting the project:

- There is diversity of accounting practices around the world for insurance contracts.
- Existing standards were overly influenced by regulatory prudence, which does not provide an accurate picture of the economics of a company.
- A deferral and matching model is not currently in favor.
- Investors in life insurance companies in Europe do not currently rely on the accounting information presented but on supplemental measures such as market consistent embedded value.
- Most current approaches for accounting for insurance contracts are inconsistent with the accounting for other industries.

As 2005 approached, the IASB realized it was unable to issue a new standard before IFRS was due to be implemented in the European Union. Consequently, it decided to split the insurance contracts project into two phases. Phase I resulted in IFRS 4, which requires insurers to account for those contracts that meet the definition of an investment contract (this is mainly related to certain life insurance contracts) in accordance with International Accounting

Standards (IAS) 39, financial instruments. In addition it made limited improvements to accounting practices for other insurance contracts. The work on Phase II of developing a new measurement model for insurance contracts is still ongoing at the time of writing.

IFRS 4

One of the key components of IFRS 4 was to define an insurance and reinsurance contract as: "A contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder."

What is insurance risk versus financial risk, and what insurance risk is significant? The IASB dealt with both of these questions. Financial risk was defined as the risk of a possible future change in one or more of a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating, or credit index or other variable, provided in the case of a non-financial variable that the variable is not specific to a party to the contract. Insurance risk is risk, other than financial risk, transferred from the holder of a contract to the issuers. The IASB stated that if both financial risk and significant insurance risk are present, the contract is classified as insurance.

For what constitutes ***significant*** insurance risk, the IASB stated that insurance risk is: "Significant if, and only if, an insured event could cause an insurer to pay significant additional benefits in any scenario, excluding scenarios that lack commercial substance."

This appears to most to be a much weaker standard for risk transfer than that currently in U.S. GAAP, which requires that it is "reasonably possible" that the reinsurer may realize a significant loss from the transaction. This latter standard appears to require more than just one scenario of economic substance.

IFRS 4, beyond the definition of insurance, allowed companies to continue to use their local GAAP but put into place some minimum rules around that practice. Some key requirements of IFRS 4 were that it:

- Prohibited certain accounting policies that do not meet the IFRS accounting framework:
    - Catastrophe provisions or any reserve for events beyond the scope of current contract
    - Offsetting of reinsurance assets and direct liabilities

- Mandated certain accounting policies if they are not already in the company's existing accounting policies:

    - Liability adequacy test (already required for unearned premiums under U.S. GAAP)
    - Impairment testing of reinsurance assets (already required under U.S. GAAP)

- Allowed companies to continue, but not start certain accounting policies that do not meet the IFRS framework:
    - Stating unpaid claim liabilities on an undiscounted basis

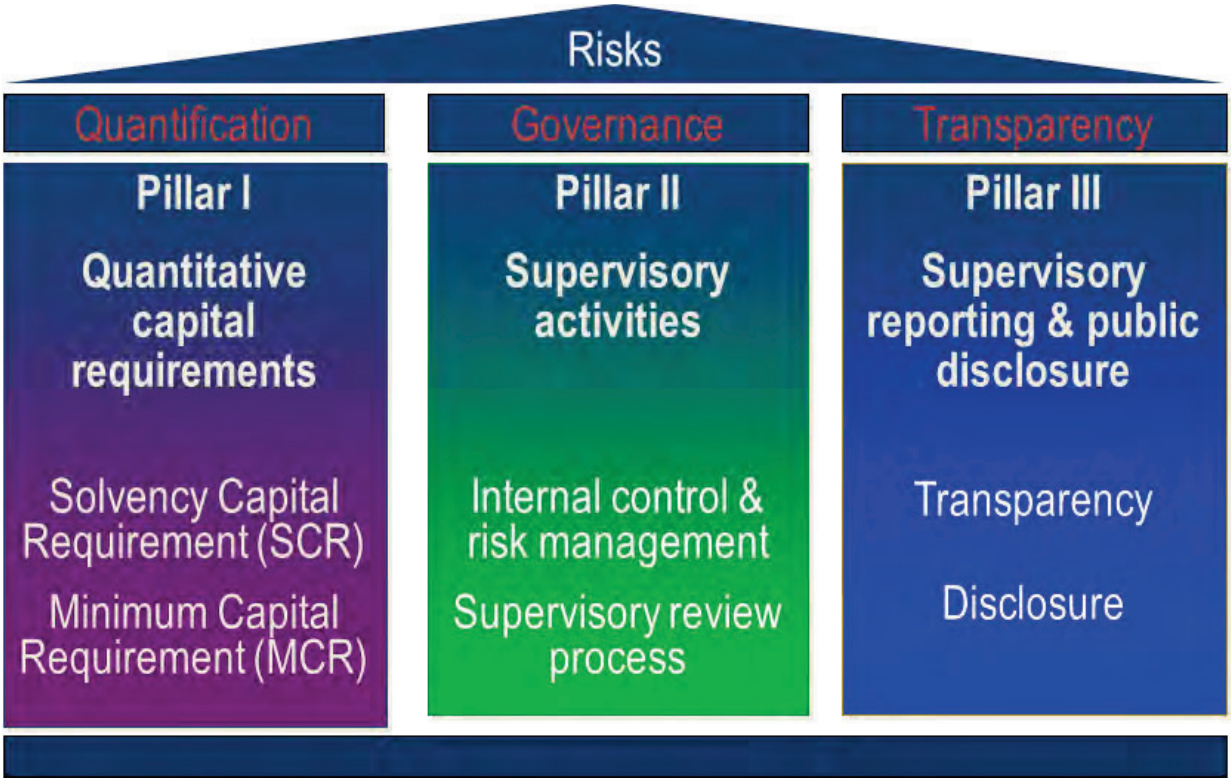
- Allowed companies to elect to introduce certain accounting policies:
    - Permitted the use of a measure as long as it was no less relevant and no less reliable than the current accounting policy such as discounting loss reserves

The IASB has continued to work on Phase II of the insurance contracts project but progress has been slow. A discussion paper was issued by the IASB in 2007, and shortly after, the FASB joined the project. In 2010, the IASB issued an exposure draft, and the FASB issued its own discussion paper. Both papers received a significant amount of comments and the boards have been re-deliberating since January 2011. The current timetable provides for the IASB and FASB to issue a revised exposure draft and initial exposure draft, respectively, by the end of the first quarter of 2013.

CHAPTER 25. SOLVENCY II

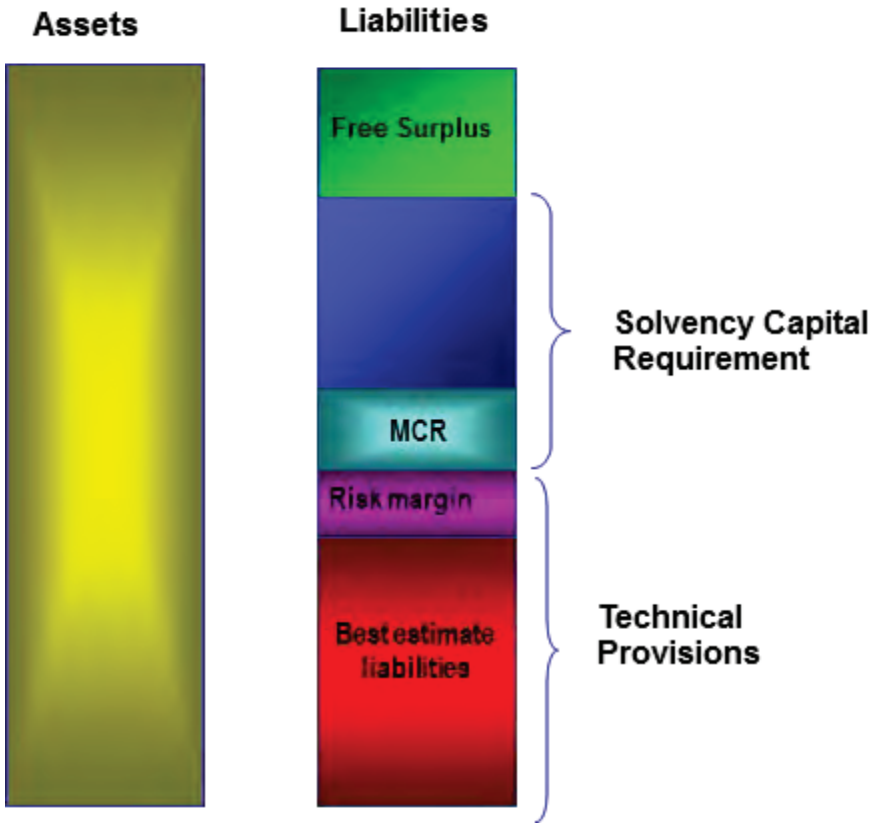
Solvency II is a new principle-based insurance regulatory system to determine the required capital levels of insurance companies in the European Union. It was developed to primarily link the required capital of insurance companies to their risk profile.

Solvency II is scheduled to be implemented from January 1, 2015, on. The new system will be based on three pillars similar to those of Basel II. Those pillars are quantification, governance, and transparency.



PILLAR I — QUANTITATIVE CAPITAL REQUIREMENTS

Pillar I is focused on the quantitative aspect of Solvency II to obtain the solvency capital requirement (SCR) and minimum capital requirement (MCR). The measurement approach is summarized in the following diagram and is often referred to as the total balance sheet approach.



On the asset side of the balance sheet, non-insurance assets are recorded using the measurement approach under International Financial Reporting Standards (IFRS). Reinsurance assets are measured in the same way as insurance liabilities. On the liability side of the balance sheet, the technical provisions consist of the discounted best estimate of the liabilities and their associated risk margin. These are meant to represent the fair market value of the insurance liabilities, and although principles based, the approach to calculating them is fairly prescriptive. The best estimate of the liabilities is the expected value of the cash flows discounted using a risk-free rate plus an illiquidity premium. The risk margin is calculated using a cost of capital method with the cost of capital above the risk-free rate (R-i from Chapter 23) equal to 6%. The required capital at each point in time is the SCR.

The SCR is defined as the amount of capital required to limit the probability of ruin over the forthcoming year to 0.5%, i.e., a one-year 99.5% Value at Risk (VaR). A company whose capital falls below the SCR will be subject to regulatory intervention. If it falls even further below the MCR, the company will not be permitted to operate. Critics have noted that the one-year 99.5% VaR is not an adequate measure for bearing the risk to ultimate settlement. Solvency II requires consideration of recapitalization based on adverse development in each future annual period, yet doesn't assume you need to hold sufficient capital from inception to settlement without raising capital. Therefore, critics of Solvency II believe using one-year

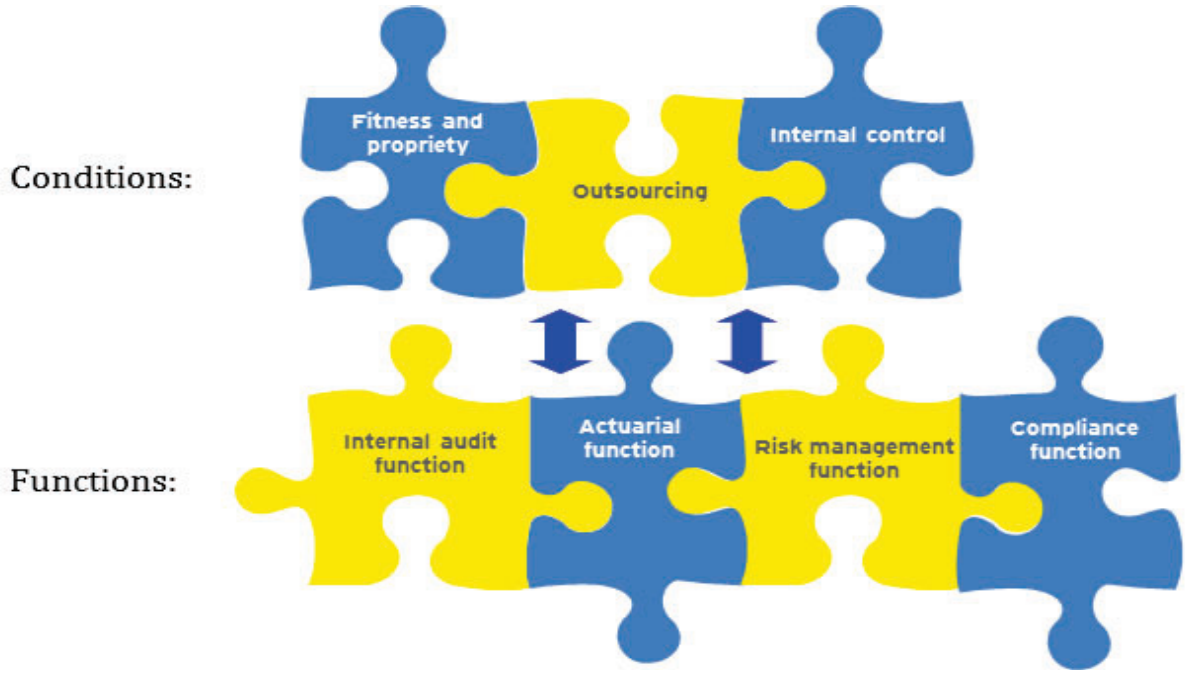
99.5% VaR as the capital standard in the risk margin calculation does not provide a true fair market value.

The SCR can be calculated using the standard model (a spreadsheet model provided by the regulator), an approved internal model or a mix of both. To obtain approval for an internal model, the company has to demonstrate that the model is used in running the business, has been validated by an independent third party and is documented appropriately. The benefit of using an internal model is the likely outcome of a lower SCR.

Any remaining amount between the assets minus the technical provisions and SCR is considered free surplus.

PILLAR II – SUPERVISORY ACTIVITIES

Pillar II provides the supervisor with the tools required to identify high-risk companies and the power to intervene. First, this pillar requires companies to have the governance structure in place to address key areas:



The functional areas, while each satisfying the conditions, should be allocated responsibility that avoids duplication. Each one is viewed as essential for an insurance business to operate effectively. Key responsibilities of each function include:

- Internal audit: Produce a report at least annually to the board of directors on any deficiencies of the internal controls and any shortcomings in compliance with internal

policies and procedures. This function should have unrestricted access to information and staff.

- Actuarial: Ensure the reasonability of methods and assumptions used in calculating the technical provisions and providing a look-back analysis of best estimates against experience. Also, provide opinions on the overall underwriting policy and adequacy of reinsurance arrangements.
- Risk management: Monitoring the risk management function and maintaining an aggregated view. Ensure the integration of any internal model with the risk management function.
- Compliance: Ensure the internal control system is effective to comply with all applicable laws and regulation, promptly reporting any major compliance issues to the board of directors.

Pillar II also requires that companies complete an own risk self-assessment (ORSA). An ORSA was defined by a Committee of European Insurance and Occupational Pensions Supervisors Issues Paper in May 2008: "The ORSA can be defined as the entirety of the processes and procedures employed to identify, assess, monitor, manage, and report the short- and long-term risks a (re) insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking's overall solvency needs are met at all times."

An ORSA should contain at a minimum the following:

- The overall solvency needs, taking into account the specific risk profile, approved risk tolerance limits and the business strategy of the undertaking
- The compliance with the capital requirements and the requirements regarding technical provisions
- The extent to which the risk profile of the undertaking deviates significantly from the assumptions underlying the SCR, calculated with the standard formula or with its partial of full internal model

The ORSA results will periodically be reported to the supervisor who will use the results as input for their risk-based supervision and actions. The ORSA will also be the basis for the dialogue between the insurer and the supervisor regarding important decisions made by the insurer.

In the case of significant deviations from the risk profile, the ORSA will be the starting point of the supervisor's process that could lead to a capital add-on (i.e., an increase in the SCR).

PILLAR III — TRANSPARENCY

Pillar III is the means by which information about a company's capital and regulatory position collected from pillars I and II is given to the supervisor and the financial markets. Some items will be reported quarterly and others annually. The purpose of public disclosure of a company's financial and solvency position is to increase market discipline because companies are aware that their risk-based decisions will be in the public domain.

CHAPTER 26. TAXATION IN THE U.S.

Beyond the solvency and general-purpose financial reporting frameworks, the third accounting framework is taxation. Taxation has many forms, including the direct taxation of the income of corporations. Generally, tax is imposed on net profits from business, net gains, and other income. The income subject to taxation is determined under accounting principles that are modified or replaced by tax law principles where a different basis is determined as necessary by the relevant taxing authorities. In the U.S., insurance companies are taxed based on their statutory income with adjustments that will be described herein.

Understanding the impact of federal taxation is important for insurance contract pricing, insurance company valuation, constructing capital models, and assisting in the preparation of federal tax returns. Too often actuaries simplify a company's tax situation by grossing up underwriting profit by 1/(1%-35%). This simplification ignores the significant effects of federal taxes on income and company valuations.

In this chapter, we will give a summary of how taxable income is derived for insurance companies from their statutory accounts, including a review of the adjustment of loss reserves for discounting. We will review the process for determining taxable income from statutory underwriting income and investment income. Statutory underwriting income consists of premium revenue minus loss and expenses. So we will start with premium revenue, otherwise known as earned premium.

TAX BASIS EARNED PREMIUM

On a tax basis, earned premium is adjusted for "revenue offset." The need for the revenue offset stems from a lack of a deferred acquisition cost asset under statutory accounting. Assume that today a company wrote a policy for $100 but incurred $20 in acquisition costs. Under statutory accounting, the company would incur $20 loss in income from establishing an unearned premium reserve of $100 and payment of $20 in acquisition costs. Rather than allow companies to claim a tax refund on that "loss" under statutory accounting, the IRS has established the revenue offset procedure. The revenue offset procedure assumes that acquisition costs are 20% for all lines of business and all types of insurers. In our example the unearned premium reserve would be reduced by $20, resulting in the income effect from writing this contract as $0.

Statutory earned premium is calculated as written premium minus the change in the unearned premium reserve. Under the revenue offset procedure, tax basis earned premium is written premium minus 80% of the change in unearned premium reserves.

Tax Basis Earned Premium
= Written Premium – (0.8 x (Change in Unearned Premium Reserve))

This formula can be rearranged to give:

Tax Basis Earned Premium
= Statutory Earned Premium
+ (0.2 x (Change in Unearned Premium Reserve)).

Where the change in Unearned Premium Reserve
= Unearned Premium Reserve at end of period – Unearned Premium Reserve at beginning of period.

TAX BASIS INCURRED LOSSES AND EXPENSES

Statutory calendar-year incurred losses are paid losses plus the change in full-value loss reserves:

Incurred losses = Paid losses + Change in full value loss reserves
= Paid losses + (Full value loss reserves at end of period – Full value loss reserves at beginning of period).

For long-tailed lines of business, time value of money considerations in the pricing of policies would result in an underwriting loss under this statutory definition of incurred losses. As we previously discussed, the Internal Revenue Service (IRS) prefers not to provide insurance companies with a tax refund on what appears to be a temporary loss until investment income can be made on the reserves held until the claims are paid. To avoid this, tax basis accounting is more aligned with economic reality by requiring the discounting of loss reserves, albeit with defined rules and the lack of a risk margin/adjustment.

Our next section will discuss the process of discounting for taxes in more detail. For now it is sufficient to understand that:

Tax Basis Incurred Losses = Paid Losses + Change in Discounted Reserves
= Statutory Incurred Losses – Change in Reserve Discount.

Expenses are the same under statutory and tax bases.

INVESTMENT INCOME

Taxable investment income consists of income from bonds, mortgages, real estate, and venture capital, and realized capital gains. In addition, there are two key adjustments: proration of tax-exempt municipal bond interest and proration of dividend received deduction for stockholder dividends.

Tax-exempt municipal bonds are just that for most taxpayers. Insurance companies, though, are required under the 1986 Tax Reform Act to add 15% of the interest income on tax-exempt municipal bonds to their taxable income. This proration effectively requires insurance companies to pay 15% x 35% = 5.25% tax on tax-exempt municipal bond income.

Dividends are paid by a company to its stockholders from after-tax earnings. In turn the stockholders, if individuals, pay taxes on these dividends. This is commonly referred to as double taxation. In the case of corporate stockholders certain allowances are made to reduce tax on dividends to avoid triple taxation when they in-turn dividend earnings to their investors. These allowances are called dividends-received deduction (DRD). The amount of the DRD is determined based on the relationship of the dividend paying corporation and the corporation being taxed. There are three levels of DRDs:

- Controlled: If the corporation being taxed owns 80% or more of the dividend-paying corporation, then the dividend income received is 100% exempt from tax.
- Affiliated: If the corporation being taxed owns at least 20% but less than 80% of the dividend-paying corporation, then 20% of the dividend income is subjected to tax.
- Unaffiliated: If the corporation being taxed owns less than 20% of the dividend-paying corporation, then 30% of the dividend income is subjected to tax.

For insurance companies, this is not quite the end of the story, as the proration provision of the tax code that requires insurance companies to pay tax on the income from tax-exempt municipal bonds also applies to dividend income from affiliated and unaffiliated companies. Therefore, the effective tax rates on dividend income for insurance companies from affiliated and unaffiliated companies are:

- Affiliated: (20% x 35%) + (80% x 15% x 35%) = 11.2%
- Unaffiliated: (30% x 35%) + (70% x 15% x 35%) = 14.175%

ALTERNATIVE MINIMUM INCOME TAX AND THE MINIMUM TAX CREDIT

Now that we have derived taxable income, we can establish the regular tax liability, which is 35% of regular taxable income. Yet that is not the end of the necessary calculations. A company whose investment strategy is heavily weighted to tax-exempt investments may have a high amount of income but little taxable income. To prevent such companies from paying little or no income tax, Congress has established an alternative minimum taxable income (AMTI), which sets a lower bound at which companies are taxed. AMTI consists of regular taxable income plus 75% of income that escapes regular taxation, such as the complement of the prorated municipal bond interest included in regular taxable income.

Once the AMTI is established, the associated alternative minimum income tax (AMIT) is 20% of AMTI. The AMIT is then compared to regular income tax adjusted for the minimum tax credit (described below). If the AMIT is greater than the adjusted regular income tax, the company must pay the AMIT.

When a company pays the AMIT for the first time, the amount that the AMIT is greater than regular income tax is established as a minimum tax credit. The minimum tax credit can be used in future years (carried forward indefinitely) to reduce regular income tax but only as far as the AMIT in a specific year.

For example, if a company in its first year of operation has regular income tax of $1.0 million and an AMIT of $1.2 million, $0.2 million is established as a minimum tax credit. In the second year of operation, the company has regular income tax of $2.1 million and an AMIT of $2 million. Given the minimum tax credit, it can lower its income tax by $0.1 million to the AMIT level, carrying forward the remaining $0.1 million of minimum tax credit.

DISCOUNTING LOSS RESERVES FOR TAXES

In the section within Chapter 22 titled "Nonadmitted Assets ", we discussed the reasons statutory loss reserves are discounted in calculating taxable income. We shall now look in more detail at the prescriptive method required by the IRS to discount. The discounted loss reserves are calculated using three components:

1. The undiscounted loss reserves
2. The discount rate promulgated by the U.S. Treasury for that accident year
3. The payment pattern

The first component is obtained from Schedule P, Part 1. Reserves in Schedule P, Part 1 are net of tabular discount but gross of non-tabular discount. Therefore any tabular discount will need to be eliminated to gross-up the loss reserves from Schedule P, Part 1 onto an undiscounted basis.

The discount rate is determined for each accident year as the 60-month moving average of the Federal midterm rates ending on December 1 of the preceding accident year. The Federal midterm rate is the average rate on U.S. Treasury securities with three to nine years remaining until they mature. Once the rate is determined for an accident year, it remains constant and is applied to the accident year in all future calendar periods.

The payment pattern is determined by an election by each company once every five years in the second and seventh years of each decade. Once the election is made, it applies until five years later. The election is between relying on a paid loss development method developed by the IRS from industry aggregate Schedule P, Part 1 data or applying the methodology to the company's own Schedule P, Part 1. One key difference is once the industry pattern election is

made, the payment patterns are not updated until five years later, when the election has to be made again. For companies that elect to use their own data the patterns have to be updated every year and are based on the last completed Annual Statement available and the commencement of the current accident year. This is typically the Annual Statement from two years prior to the current year-end.

The payment pattern is derived from Schedule P, Part 1 rather than Part 3 due to:

- Concerns related to using data in Part 3 that doesn't include adjusting and other expenses
- Part 1 being an audited schedule
- IRS method applied to Part 1 data requiring no judgment

The approach to deriving the payment pattern from Schedule P, Part 1 assumes that each successive accident year will pay a consistent percentage of ultimate losses based on the age of the accident year. The payment at each successive year is determined from Schedule P, Part 1 by using the ratio of cumulative paid loss and loss adjustment expense (LAE) to ultimate incurred loss and LAE. These cumulative ratios are then converted to incremental paid to ultimate incurred ratios to provide the expected future percentage of payments in successive calendar years. These incremental payments can then be discounted back, assuming that the payments take place approximately halfway through each calendar year on July 1.

For example, let's revisit Schedule P, Part 1 for Fictitious. We shall use the homeowners/farmowners line of business.

TABLE 115

Fictitious Insurance Company Schedule P, Part 1A — Incremental Payment Percentages				
Accident Year	Column 11 Net Paid Losses and LAE	Column 28 Ultimate Incurred Losses and LAE	Cumulative Percentage Paid	Incremental Percentage Paid
2002	1,035	1,038	99.71%	0.04%
2003	1,220	1,224	99.67%	0.00%
2004	1,509	1,514	99.67%	2.71%
2005	1,530	1,578	96.96%	-2.39%
2006	1,534	1,544	99.35%	0.65%
2007	1,599	1,620	98.70%	1.01%
2008	2,413	2,470	97.69%	0.99%
2009	2,404	2,486	96.70%	4.20%
2010	2,589	2,799	92.50%	15.74%
2011	3,346	4,359	76.76%	76.76%

Often, by the end of 10 years the paid-to-incurred ratio is less than 100%. In these cases the IRS has determined an extension of payments calculation. If the amount remaining unpaid after 10 years is less than the amount paid in the 10th year, the remaining amount is assumed to be paid in the 11th year. If the amount remaining is greater than the amount to be paid in the 10th year, the 10th year payment is repeated until all the remaining amount is paid or the 16th year is reached, in which the total remaining unpaid is assumed to be paid in the 16th year. This is the case for homeowners/farmowners, where the remaining unpaid is 0.29% (= 100% - 99.71%), which is greater than the amount to be paid in year 10 (0.04%). Therefore, we repeat the 0.04% incremental percentage paid in years 11 through 15, and then the total remaining unpaid of 0.09% is assumed to be paid in year 16.

If the cumulative percentage paid for homeowners/farmowners had instead been 100% in the 10th year (accident year 2002 in this case), the incremental percentage paid would have been 0.33% in year 10, and no further payments would be made after 10 years.

We can perform the same calculation for the commercial automobile liability line of business.

TABLE 116

Fictitious Insurance Company Schedule P, Part 1C —Incremental Payment Percentages				
Accident Year	Column 11 Net Paid Losses and LAE	Column 28 Ultimate Incurred Losses and LAE	Cumulative Percentage Paid	Incremental Percentage Paid
2002	1,498	1,526	98.17%	0.62%
2003	1,509	1,547	97.54%	0.80%
2004	1,336	1,381	96.74%	5.29%
2005	1,220	1,334	91.45%	0.18%
2006	1,140	1,249	91.27%	2.65%
2007	1,238	1,397	88.62%	8.66%
2008	1,133	1,417	79.96%	15.62%
2009	911	1,416	64.34%	17.41%
2010	711	1,515	46.93%	23.71%
2011	378	1,628	23.22%	23.22%

As you can see from Table 116, the 10th year cumulative percentage paid for commercial auto liability is also less than 100%. Therefore, we repeat the 0.62% incremental percentage paid in years 11 and 12 before finally getting to 100% with an incremental paid percentage of 0.59% in year 13.

PART VII. CANADIAN-SPECIFIC REPORTING

INTRODUCTION TO PART VII

This part provides an overview of insurance financial reporting in Canada and a description of the main participants who influence the reporting framework in Canada. The Canadian regulatory Annual Statement and certain key elements of particular importance to Canadian actuaries are discussed.

CHAPTER 27. OVERVIEW OF FINANCIAL REPORTING IN CANADA

OVERVIEW

Insurance regulators, the accounting profession, and the actuarial profession play a role in setting the framework for insurance financial reporting in Canada.

Insurance is regulated in Canada at the federal and provincial levels. As a result, insurance companies can choose to be registered federally (across Canada) or separately in each province where they conduct business. The majority of insurers are regulated federally under the jurisdiction of the Office of the Superintendent of Financial Institutions (OSFI).[205] Registered insurers are required annually to file detailed financial statements with supporting exhibits and quarterly updates. In addition, since 1992 registered insurers have been required to appoint an actuary to value their policyholders' liabilities and to report at least annually on the current and future financial condition of the insurer. Each province regulates its own policy forms and monitors market conduct; hence, insurers must also be licensed by each province in which it writes business regardless of where it is registered.

OFFICE OF THE SUPERINTENDENT OF FINANCIAL INSTITUTIONS

OSFI is a federal agency established in 1987 under the Office of the Superintendent of Financial Institutions Act. OSFI's mandate is to supervise all federally regulated financial institutions, monitor federally regulated pension plans and provide actuarial advice to the Government of Canada.

OSFI's activities are structured to protect the rights and interests of depositors, policyholders, pension plan members, and creditors of financial institutions and in so doing to contribute to the public confidence in a safe and sound financial system. This is accomplished through supervision to identify key risks in certain institutions and intervene as appropriate and through regulation to enhance the financial system's safety and soundness.

OSFI differs from the National Association of Insurance Commissioners (NAIC) in that OSFI covers all federally regulated financial institutions and not just insurance companies. OSFI has authority over the entities it regulates, whereas the NAIC is a coordinating body that works with state insurance regulators to provide support and coordination to the regulation of multistate insurers across the various states.

CANADIAN INSTITUTE OF CHARTERED ACCOUNTANTS

In 2010 the Canadian Accounting Standards Board adopted International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) as the financial reporting framework for publicly accountable entities (PAE). Regulated insurance

[205] Office of the Superintendent of Financial Institutions Canada, http://www.osfi-bsif.gc.ca/, May 29, 2012.

companies meet the definition of PAEs and therefore were required to adopt IFRS as of January 1, 2011 (with comparative information for 2010). The Canadian Institute of Chartered Accountants will adopt all changes to IFRS standards issued by IASB as part of the reporting framework for PAEs.[206]

The IFRS standard that deals with accounting for insurance contracts allows for the continuation of the valuation practices in existence at the adoption of IFRS that Canadian Generally Accepted Accounting Principles (CGAAP) provided for insurance contracts. Under CGAAP the policy liabilities can be recorded in accordance with accepted actuarial practice in Canada, which means the recorded liabilities are discounted to reflect the time value of money and include a provision for adverse deviation. The accounting for foreign branches and domestic insurers is substantially the same, and their financial statements are both prepared in accordance with IFRS. However, there are two key differences for foreign branches:

1. The assets of foreign branches are required to be under the control of either the Minister of Finance of Canada or the branches' Chief Agent in Canada. The amount of assets under the control of the Minister of Finance is determined by the branch test of adequacy of assets. Assets that are under the control of the Minister of Finance are to be placed in a trust.

2. There is no share capital account, as the entity is operating as a branch of its parent; therefore, there is a head office account instead.

CANADIAN INSTITUTE OF ACTUARIES

The Canadian Institute of Actuaries (CIA) is the national organization of the Canadian actuarial profession.[207] The CIA serves the public through the provision, by the profession, of actuarial services and advice of the highest quality.

Accepted Actuarial Practice (AAP) is the manner of performing work in Canada in accordance with the rules and the Standards of Practice (SOP) of the CIA. SOP is the responsibility of the Actuarial Standards Board,[208] and approval of standards and changes to standards is made through a process that involves consultation with the actuarial profession and other interested parties. If AAP conflicts with the law, the actuary should comply with the law but report the conflict and, if practical, useful and appropriate under the terms of the engagement, report the result of applying accepted actuarial practice.

The SOPs published by the CIA are binding on fellows, associates, and affiliates of the CIA for work in Canada and for members of bilateral organizations, as defined in the bylaws, when those members are practicing in Canada. The standards consist of recommendations and

[206] Chartered Accountants of Canada, http://www.cica.ca/, 2012.
[207] Canadian Institute of Actuaries, http://www.actuaries.ca/, 2012.
[208] Actuarial Standards Board, "*About the ASB – Terms of Reference,*" http://www.actuaries.ca/ASB, July 4, 2011.

other guidance. A recommendation is the highest order of guidance in the standards. Unless there is evidence to the contrary, there is a presumption that a deviation from a recommendation is a deviation from accepted actuarial practice. The other guidance, which consists of definitions, explanations, examples, and useful practices, supports and expands upon the recommendations.

The standards consist of general standards and practice-specific standards. The general standards apply to all areas of actuarial practice. Usually, the intent of the practice-specific standards is to narrow the range of practice considered acceptable under the general standards.

Actuaries practicing in Canada should be familiar with relevant educational notes and other designated educational material affecting their practice. Educational notes are not binding on an actuary; however, educational notes and other designated educational material describe but do not recommend practice in illustrative situations. A practice that the educational notes describe for a situation is not necessarily the only accepted practice for that situation and is not necessarily accepted actuarial practice for a different situation.

DIFFERENCES BETWEEN STATUTORY AND OTHER FINANCIAL/REGULATORY REPORTING FRAMEWORKS IN CANADA

Canadian insurers were required to prepare their financial statements in accordance with IFRS, as issued by the IASB for their fiscal years commencing in 2011. The Canadian Annual Returns were also modified to include the impacts of changes to IFRS. Upon the introduction of IFRS, the insurance contracts standard (IFRS 4) permitted insurers to apply CGAAP for their insurance contracts. At this point, therefore, the introduction of IFRS has had little impact on the financial statements of Canadian property/casualty insurers, and as in the past, the statutory Annual Return is prepared on the same basis as the company's financial statements.

Statutory Accounting Principles (SAP) is the accounting framework under which all U.S. insurance companies are required to report for state regulatory purposes. There are many differences between SAP and IFRS, including the valuation of invested assets and the valuation of policy liabilities. These differences arise because in Canada there is a desire to achieve consistency with published financial statements and in the U.S. there is a focus on insurer solvency.

CHAPTER 28. CANADIAN ANNUAL STATEMENT

OVERVIEW

All insurers are required to file an Annual Return (or Canadian Annual Statement) based on International Financial Reporting Standards (IFRS) in each province where they are licensed and with the Office of the Superintendent of Financial Institutions (OSFI) if they are federally regulated. The Annual Returns are prescribed forms that are annually reviewed by the Canadian Council of Insurance Regulators with one return applicable to domestic insurers (P&C-1) and the other return applicable to foreign insurers (P&C-2). The full P&C-1 or P&C-2 is to be completed and filed annually within 60 days of year-end. In addition, there is a requirement to file interim returns on a quarterly basis within 45 days of the end of the quarter.

PREPARATION OF KEY SCHEDULES

The Canadian Annual Return (P&C-1) is logically divided into a number of sections as follows:

- General information: This section contains information about the company, its officers, and directors and a summary of selected financial data for five years.
- Consolidated financial statements: This section shows the company's balance sheet (assets, liabilities, and equity), Statement of Income; statement of retained earnings and reserves; comprehensive income and accumulated comprehensive income; statement of cash flows; statement of changes in equity; and notes.
- Statutory compliance: This is the minimum capital test and supporting exhibits.
- Investments: This includes detailed information relating to the company's invested assets.
- Miscellaneous assets and liabilities: This includes items such as other receivables and interests in joint ventures.
- Premiums, claims, and adjustment expenses: This section contains detailed information relating to unearned premiums, incurred losses, claims liabilities, and runoff of claims and adjustment expenses.
- Provincial and territorial summaries: This provides geographical premium and claims information.
- Reinsurance ceded: This includes information related to premiums and claims ceded.
- Commissions and expenses: This includes details relating to commissions and operating expenses.
- Out of Canada exhibits: This section provides detail relating to operations outside of Canada.

- Non-consolidated financial statements and exhibits: Financial statements and many of the exhibits are also provided on a non-consolidated basis.

To be considered complete, the report of the appointed actuary must be submitted with the Annual Return for those insurers in Canada that have an appointed actuary. It is expected that the values reported in the financial statements for the items included in the opinion of the appointed actuary not differ materially from the values as reported by the appointed actuary.

BALANCE SHEET

Appendix II of this publication shows separately the assets and liabilities and equity elements of the balance sheet for the total of all Canadian property/casualty insurance companies as reported by the OSFI. The actuary should be familiar with all aspects of the Annual Return; however, the Canadian actuary is opining on the policy liabilities and is thus expected to demonstrate a significant understanding of all elements of the policy liabilities (claims and premium liabilities).

The claims and premium liabilities are typically the largest liabilities on the balance sheet of an insurer and consist of the following:

1. Claims liabilities:
    a. Direct unpaid claims and adjustment expenses
    b. Assumed unpaid claims and adjustment expenses
    c. Ceded unpaid claims and adjustment expenses
    d. Other amounts to recover
2. Premium liabilities:
    a. Gross unearned premiums
    b. Net unearned premiums
    c. Premium deficiency reserves
    d. Other net liabilities
    e. Deferred policy acquisition expenses
    f. Unearned commissions

Table 117 summarizes the balance sheet provided in Appendix II of this publication into key items from the perspective of the actuary.

TABLE 117

Balance sheet summary — Canadian property/casualty companies at December 2011			
Assets		**Liabilities and Equity**	
Total investments	61,412,454	Unpaid claims and adjustment expenses	41,294,310
Unpaid recoverable from reinsurers	7,592,262	Unearned premiums	17,528,620
Deferred policy acquisition expenses	2,965,054	Other liabilities	5,765,662
Other assets	18,647,065	Equity	26,028,243
Total assets	90,616,835	**Total liabilities and equity**	90,616,835

As illustrated, the unpaid claims and loss adjustment expense (LAE) and unearned premium liabilities are the most significant liabilities on the balance sheet. In Canada, the claims and premium liabilities are reported on the balance sheet on a gross basis. That is, the liabilities are reported gross of reinsurance, and an asset is recorded to reflect the amount of the liabilities expected to be recoverable from reinsurers, which, as illustrated above, is a significant asset on the balance sheet.

The liabilities in Canada are recorded in accordance with Accepted Actuarial Practices (AAP), which requires that the liabilities be equal to the value discounted to reflect the time value of money plus a provision for adverse deviation (PfAD). A discount rate has to be selected to determine the present value of the liabilities. This discount rate is defined by the Canadian Institute of Actuaries as follows:

> "The expected investment return rate for calculation of the present value of cash flow is that to be earned on the assets, taking into account reinsurance recoverables, that support the insurance contract liabilities. It depends on
>
> > the method of valuing assets and reporting investment income,
> > the allocation of those assets and that income among lines of business,
> > the return on the assets at the balance sheet date,
> > the yield on assets acquired after the balance sheet date,
> > the capital gains and losses on assets sold after the balance sheet date,
> > and investment expenses, and losses from default (C-1 risk).
>
> The actuary need not verify the existence and ownership of the assets at the balance sheet date, but would consider their quality." [209]

This definition requires the actuary to also have an understanding of the assets on the balance sheet, how they are valued and the insurer's investment policy. Typically, invested

[209] CIA ASB, Actuarial Standards of Practice – Practice-Specific Standards for Insurance (2000), *Present Values*, page 2023. http://www.asb-cna.ca/. *(Effective January 1, 2003 Revised June 1, 2006; February 5, 2009; November 24, 2009; December 3, 2009.)*

assets are used to support insurance contract liabilities. Therefore, the actuary should be able to estimate the expected investment return on those assets. The following chart, Table 118, illustrates a simple calculation of the market yield of a bond portfolio. The market yield and modified duration are calculated using readily available spreadsheet functions and the overall yield is calculated using the product of modified duration and market value as weights.

TABLE 118

XYZ Insurance Company
CDN$
Evaluation Date: December 31, 2011

Description	Interest Rate	Maturity Date	Par Value	Market Value	Market Yield	Effective Market Yield	Modified Duration
BOND A	5.38%	18-11-50	320,000.00	371,314.76	4.50%	4.55%	17.60
BOND B	4.87%	18-06-42	8,844,000.00	10,420,050.06	3.87%	3.91%	16.95
BOND C	4.46%	08-11-41	235,000.00	252,477.15	4.03%	4.07%	16.81
BOND D	6.95%	24-10-41	805,000.00	874,269.61	6.31%	6.40%	12.99
BOND E	5.15%	15-11-40	75,000.00	85,366.32	4.31%	4.35%	15.75
BOND F	3.10%	18-06-40	2,055,000.00	2,638,690.57	1.82%	1.83%	20.13
BOND G	4.56%	26-03-40	1,080,000.00	1,321,528.41	3.33%	3.36%	16.91
BOND H	4.99%	30-10-37	200,000.00	247,497.12	3.57%	3.61%	15.57
BOND I	5.04%	21-09-29	200,000.00	275,976.38	2.40%	2.41%	12.60
BOND J	4.30%	08-09-23	355,000.00	531,274.16	0.04%	0.04%	9.73
BOND K	3.25%	18-12-21	25,000.00	25,948.14	2.81%	2.83%	8.50
BOND L	8.50%	22-11-21	200,000.00	224,468.00	6.78%	6.90%	6.79
BOND M	8.00%	27-03-18	6,134,000.00	6,360,609.90	7.25%	7.38%	4.79
BOND N	4.25%	30-05-17	3,270,000.00	2,893,628.26	6.83%	6.94%	4.68
BOND O	4.95%	10-03-16	4,800,000.00	4,947,188.78	4.14%	4.19%	3.71
BOND P	4.80%	18-06-14	378,000.00	405,969.44	1.72%	1.73%	2.34
BOND Q	5.56%	30-10-13	1,375,000.00	1,449,829.32	2.50%	2.51%	1.73
BOND R	4.95%	23-08-13	2,600,000.00	2,712,868.67	2.25%	2.26%	1.56
BOND S	4.54%	08-04-13	5,000,000.00	5,225,046.55	0.97%	0.98%	1.23
Total			**37,951,000.00**	**41,264,001.60**			
			Market value duration weighted average yield			3.93%	

The actuary would typically reduce the yield as calculated above to reflect investment expenses, e.g., discount rate = market yield – investment expenses = 3.93% - 0.25% = 3.68%.

There are also other more complex methods employed for estimating the investment yield, such as using a discounted cash flow model where the discount rate is the rate at which the present value of claims cash flows equals the market value of the assets.

INCOME STATEMENT

Appendix II of this publication shows the income statement for the total of all Canadian property/casualty insurance companies as reported by the OSFI. The income statement measures the financial performance of the insurer over the accounting period. The net

income for the period is equal to revenues less expenses and income taxes. For an insurance company, revenues and expenses are separately identified for insurance underwriting operations, investment operations, and other operations (mainly from subsidiaries, or affiliated or ancillary operations).

In the Canadian Annual Return, insurance revenue consists of net premiums written, which is equal to direct written premiums plus assumed written premiums less written premiums ceded to reinsurers.

The change (opening unearned premiums less ending unearned premiums) in net unearned premiums is added to net written premiums resulting in net premiums earned. The net premiums earned item is the net underwriting revenue that is attributable to the accounting period under consideration. Other underwriting-related revenues are added, such as service charges to generate total underwriting revenue.

Incurred claims, claims adjustment expenses, acquisition expenses, general expenses, and any premium deficiency adjustments must be deducted from total underwriting revenue to derive the underwriting income or loss for the period under consideration. Gross incurred claims and adjustment expenses are equal to gross claims and adjustment expenses paid during the period plus the change in gross unpaid claims and adjustment expenses (calculated in accordance with accepted actuarial practice) over the period. The reinsurers' share of claims and adjustment expenses is deducted from gross incurred claims and adjustment expenses to derive net claims and adjustment expenses. This calculation of net incurred claims and adjustment expenses provides the best matching of revenues and expenses over the period, where revenues are defined above.

The categories of acquisition expenses shown in the income statement in the Canadian Annual Return are gross commissions, ceded commissions, taxes, and other acquisition expenses. For an insurer that distributes its products through the independent broker network, commissions are typically the largest cost of acquiring the business. For those companies who have captive agents or who distribute their products directly to the consumer, the other acquisition expense will be larger. The net commission expense is the gross (direct plus assumed) commission expense less any commission income received from ceding reinsurance — typically ceding commissions received on proportional reinsurance. The tax expense item is for taxes, other than income taxes, such as premium taxes, associated with writing insurance in Canada.

General expenses are items that do not relate directly to the acquisition of the business. This includes salaries, management fees, professional fees, occupancy costs, and information technology costs, among other items not directly related to the acquisition of the business.

Premium deficiency adjustments are required if the actuary determines that the net policy liabilities in connection with the net unearned premium are larger than the total of the net

unearned premium plus unearned commission liabilities less the deferred policy acquisition expense asset as recorded by the company.

Net investment income consists of investment income earned plus realized gains (losses), less investment expenses.

Underwriting income, net investment income, and other revenues and expenses are added to derive net income before income taxes and extraordinary items. Income taxes are separated into current income taxes and deferred income taxes.

Extraordinary items, net of income tax, are added to arrive at the net income or loss for the accounting period under consideration.

STATEMENT OF RETAINED EARNINGS

The statement of retained earnings illustrates the calculation of the retained earnings for the insurance company at the end of the reporting period. The retained earnings at the end of the reporting period are equal to the retained earnings at the beginning of the period plus the net income earned during the period less dividends and changes in reserves required plus any prior period adjustments.

RESERVES

This statement provides detail as to the reserves shown under the Equity section of the balance sheet. These reserves are appropriations of surplus for items such as earthquakes or nuclear events.

STATEMENT OF COMPREHENSIVE INCOME AND ACCUMULATED COMPREHENSIVE INCOME

Total comprehensive income for the reporting period is equal to net income as reported on the Statement of Income (above) plus other comprehensive income (OCI). OCI comes from changes in unrealized gains (losses) on available-for-sale assets such as loans, bonds, and debentures and equities; derivatives designated as cash flow hedges; foreign currency translation; and share of OCI of subsidiaries, associates, and joint ventures. Items that are reclassified to earnings of gains (losses) are also included in OCI.

Accumulated other comprehensive income is the cumulative value of OCI or the total of unrealized gains on the above noted items that is included in the equity on the balance sheet.

STATEMENT OF CASH FLOWS

The statement of cash flows derives the value of cash and cash equivalents that are included as the cash item on the balance sheet at the end of the reporting period. Cash flow is derived from or used in operating activities, investing activities and financing activities. The cash flow

during the year from these activities is added to the opening cash to derive the cash balance at the end of the year.

Operating activities relate to the operation of the business and include such items as:

- The net income generated during the year
- Changes in receivables
- Changes in unearned premiums and unpaid claims liabilities
- Recognized gains/losses in investments

The cash flow from investing activities is basically the net cash flow from the purchase of new investments and the proceeds from the sale of investments plus the amortization of premiums on investments.

The cash flow from financing activities is the net cash flow from increasing/repayment of borrowing plus the increase/redemption of shares less dividends to shareholders.

STATEMENT OF CHANGES IN EQUITY

This exhibit illustrates the change in equity across the various classes of equity (e.g., share capital, retained earnings, available for sale financial assets) resulting from various transactions or events such as issue of share capital, total comprehensive income for the year, and dividends.

NOTES TO FINANCIAL STATEMENTS

The Notes to Financial Statements are an integral part of the financial statements. The notes provide significant detail on such important items as the basis of presentation, the basis of measurement, significant accounting policies and detailed explanations relating to some of the key financial statement items.

IMPACT OF REINSURANCE, INCLUDING COMMUTATIONS

Generally, insurance companies purchase reinsurance to limit their risk to loss from certain events. There are many different forms of reinsurance contracts that insurers can enter into, allowing each insurer to manage risk and capital in accordance with its own objectives. These reinsurance contracts can be used to protect against multi-claim, catastrophic events, individual large losses, and poor experience across a line of business, among other uses, and thereby act to reduce volatility in insurance results.

In the event that a registered insurer cedes business to a non-registered insurer, the registered insurer will have to secure adequate collateral from the non-registered insurer to receive full capital credit for the cession of this business. The collateral must be secured through a Reinsurance Security Agreement providing the adequate level of creditor protection to the ceding insurer.

Treaty reinsurance is a contract that applies to all or a portion of an insurance company's contracts during the term of the agreement, typically a calendar year. These contracts generally are placed on an excess basis or on a proportional (quota-share) basis. In an excess treaty, the reinsurer responds to all claims during the treaty period excess of a specified threshold to a specified limit, e.g., automobile claims for $5 million excess of $5 million. In a proportional treaty, the reinsurer receives a set proportion of all premiums subject to the treaty, net of ceding commission, and in return pays the same proportion of all claims subject to the treaty. The ceding commission is paid by the reinsurer to the insurer in a proportional treaty to reimburse the insurer for policy acquisition expenses.

Facultative reinsurance differs from treaty reinsurance in that it relates to reinsurance against risks from a certain policy written by an insurer. For example, an insurance company writes a very large commercial property exposure and wishes to limit its losses from this specific policy and hence purchases facultative reinsurance excess of its retained risk.

Reinsurance contracts impact the income statement and balance sheet of an insurance company. When an insurer purchases reinsurance, it pays a ceding premium, which reduces its earned premiums during the financial reporting period. It will also reduce its gross claims and adjustment expenses incurred by the reinsurer's share of claims and adjusting expenses and reduce its commission expense for any ceding commissions received. All of these items are reflected on the income statement.

Similarly, on the balance sheet of the Canadian Annual Statement, there are two reinsurance assets: unpaid claims and adjustment expenses recoverable from reinsurers and unearned premiums recoverable from reinsurers. These assets reflect the share of the corresponding liabilities recorded by the insurer, which are recoverable from reinsurers.[210]

Table 119 charts a sample income statement and balance sheet for an insurance company prior to the application of reinsurance.

[210] This differs from the U.S. Annual Statement, where liabilities are shown net of reinsurance.

TABLE 119

No Reinsurance

Statement of Income

Premium Written	
Direct	$ 340,000
Assumed	$ –
Ceded	$ –
Net Premiums Written	$ 340,000
Decrease (increase) in Net Unearned Premiums	$ 7,000
Net Premiums Earned	$ 347,000
Gross Claims and Adjustment Expenses	$ 225,000
Ceded Claims and Adjustment Expenses	$ –
Net Claims and Adjustment Expenses	$ 225,000
Gross Commissions	$ 50,000
Ceded Commissions	$ –
Other Expenses	$ 42,500
Total Claims and Expenses	$ 317,500
Underwriting Income (Loss)	$ 29,500
Net Investment Income	$ 40,000
Net Income (Loss) before Income Taxes	$ 69,500
Income Taxes	$ 24,325
NET INCOME	$ 45,175

Balance Sheet

ASSETs	
Cash	$ 18,000
Investments	
Bonds and Debentures	$ 650,000
Common Shares	$ 120,000
Receivables	
Other Insurers	$ 20,000
Other	$ 5,000
Recoverable from Reinsurers	
Unearned Premiums	$ –
Unpaid Claims and Adjustment Expenses	$ –
Other Assets	$ 5,000
TOTAL ASSETS	$ 818,000
LIABILITIES AND EQUITY	
LIABILITIES	
Payables	
Other Insurers	$ 3,000
Other	$ 2,000
Unearned Premiums	$ 10,000
Unpaid Claims and Adjustment Expenses	$ 500,000
Other Liabilities	$ 3,000
TOTAL LIABILITIES	$ 518,000
EQUITY	
Retained Earnings	$ 300,000
TOTAL LIABILITIES AND EQUITY	$ 818,000

Table 120 shows the impact of reinsurance on a company's financial statements resulting from two simple reinsurance treaties: an excess of loss treaty and a proportional treaty. To simplify the example, we will ignore all impacts on investment income and income taxes, and, further, we will assume that the treaties run from January 1 to December 31.

For the excess of loss treaty, it is assumed that the company will cede $20,000 in premiums and that it will recover $13,000 of losses from the reinsurer, of which $10,000 will be unpaid at the end of the year. The following chart illustrates the impact on the foregoing financial statements of such a treaty.

TABLE 120

Treaty Reinsurance

Statement of Income		
Premium Written		
Direct	$	340,000
Assumed	$	–
Ceded	$	20,000
Net Premiums Written	$	320,000
Decrease (increase) in Net Unearned Premiums	$	7,000
Net Premiums Earned	$	327,000
Gross Claims and Adjustment Expenses	$	225,000
Ceded Claims and Adjustment Expenses	$	13,000
Net Claims and Adjustment Expenses	$	212,000
Gross Commissions	$	50,000
Ceded Commissions	$	–
Other Expenses	$	42,500
Total Claims and Expenses	$	304,500
Underwriting Income (Loss)	$	22,500
Net Investment Income	$	40,000
Net Income (Loss) before Income Taxes	$	62,500
Income Taxes	$	24,325
NET INCOME	$	38,175

Balance Sheet		
ASSETS		
Cash	$	1,000
Investments		
Bonds and Debentures	$	650,000
Common Shares	$	120,000
Receivables		
Other Insurers	$	20,000
Other	$	5,000
Recoverable from Reinsurers		
Unearned Premiums	$	–
Unpaid Claims and Adjustment Expenses	$	10,000
Other Assets	$	5,000
TOTAL ASSETS	$	811,000
LIABILITIES AND EQUITY		
LIABILITIES		
Payables		
Other Insurers	$	3,000
Other	$	2,000
Unearned Premiums	$	10,000
Unpaid Claims and Adjustment Expenses	$	500,000
Other Liabilities	$	3,000
TOTAL LIABILITIES	$	518,000
EQUITY		
Retained Earnings	$	293,000
TOTAL LIABILITIES AND EQUITY	$	811,000

In the example above, the accounts impacted are highlighted, and it is assumed that ceded premiums and claims have flowed through cash.

In the proportional example, it is assumed that 15% of premiums and claims are ceded and that a ceding commission of 25% is paid to the insurer. It is also assumed that due to the large ceded premium that invested assets (bonds) would be reduced and that 100% of the claims are unpaid at the end of the year. Table 121 charts the impact on the foregoing financial statements of such a treaty.

TABLE 121

Proportional Reinsurance

Statement of Income		
Premium Written		
Direct	$	340,000
Assumed	$	–
Ceded	$	51,000
Net Premiums Written	$	289,000
Decrease (increase) in Net Unearned Premiums	$	7,000
Net Premiums Earned	$	296,000
Gross Claims and Adjustment Expenses	$	225,000
Ceded Claims and Adjustment Expenses	$	33,750
Net Claims and Adjustment Expenses	$	191,250
Gross Commissions	$	50,000
Ceded Commissions	$	(12,750)
Other Expenses	$	42,500
Total Claims and Expenses	$	271,000
Underwriting Income (Loss)	$	25,000
Net Investment Income	$	40,000
Net Income (Loss) before Income Taxes	$	65,000
Income Taxes	$	24,325
NET INCOME	$	40,675

Balance Sheet		
ASSETS		
Cash	$	30,750
Investments		
Bonds and Debentures	$	599,000
Common Shares	$	120,000
Receivables		
Other Insurers	$	20,000
Other	$	5,000
Recoverable from Reinsurers		
Unearned Premiums	$	–
Unpaid Claims and Adjustment Expenses	$	33,750
Other Assets	$	5,000
TOTAL ASSETS	$	813,500
LIABILITIES AND EQUITY		
LIABILITIES		
Payables		
Other Insurers	$	3,000
Other	$	2,000
Unearned Premiums	$	10,000
Unpaid Claims and Adjustment Expenses	$	500,000
Other Liabilities	$	3,000
TOTAL LIABILITIES	$	518,000
EQUITY		
Retained Earnings	$	295,500
TOTAL LIABILITIES AND EQUITY	$	813,500

Again, accounts impacted are highlighted.

COMMUTATION OF CLAIMS

Commuting a claim is a process in which one party is relieved of its obligations in respect of the claim in exchange for a cash payment. This can happen between insurers and individual claimants, with insurers under financial stress or between insurers and reinsurers. This section addresses the commutation of claims between insurers and reinsurers.

Reinsurance contracts may contain a commutation clause, which requires the insurer to relieve the reinsurer of its obligations in exchange for a cash payment. These clauses are

typically more common in contracts that cover long-tail liabilities, and the purpose is generally to allow the reinsurer to settle its obligations within a finite period.

The primary motivation for a reinsurer to commute is to bring certainty to its results; however, there are other benefits to the reinsurer associated with commutation, including capital relief and savings in claims adjusting and administrative costs. From an insurer's point of view, there can be a benefit from commutation if there is a concern in respect of the creditworthiness of the reinsurer — the receipt of cash extinguishes this risk. Insurers also will save administrative costs. Insurers, however, once they receive the cash payment will be subject to the risk of any future adverse loss experience in respect of the commuted liability and will have to hold capital for this risk.

Claims subject to commutation typically have expected cash flows that extend into the future. Therefore, the settlement of these claims requires that financial and non-financial considerations associated with the future cash flows be contemplated. Financial considerations can include items such as the amount and timing of cash flows, the discount rate to be used, cost inflation, the potential for volatility in cash flows and income tax. Non-financial considerations can include such items as morbidity or mortality of the claimant(s), current and future entitlements of the claimant(s), and unfavorable court decisions.

The commutation of a block of claims under a reinsurance agreement typically will involve the actuary for the insurer and the actuary for the reinsurer. Each actuary will be charged with estimating the present value of the future obligations. In estimating the present value of these obligations, the actuary must consider the following:

- The nominal or undiscounted value of future loss and LAE on reported and unreported claims
- The expected timing of the payout of the undiscounted loss and LAE
- Expected investment income on assets supporting these cash flows
- Income tax
- An appropriate risk load to provide for volatility

An example calculation of a commuted value of a portfolio is illustrated below.

TABLE 122

Estimate of Commuted Value of Claims
December 31, 2012

	Total	2013	2014	2015	2016	2017	2018	2019	2020
Estimated Payments in Period	$1,000,000	$350,000	$150,000	$125,000	$100,000	$100,000	$75,000	$50,000	$50,000
Payment Duration		0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5
Duration Matched Risk Free Rate		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Present Value Claims Cash Flow	$950,223	$346,552	$145,610	$118,962	$93,304	$91,474	$67,261	$43,961	$43,099
Undiscounted Future Payments		$1,000,000	$650,000	$500,000	$375,000	$275,000	$175,000	$100,000	$50,000
Required Margin		10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Regulatory Capital at 200%		$200,000	$130,000	$100,000	$75,000	$55,000	$35,000	$20,000	$10,000
Risk Cost of Capital		9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%	9.00%
Cost of Capital in Period		$18,000	$11,700	$9,000	$6,750	$4,950	$3,150	$1,800	$900
Duration		1	2	3	4	5	6	7	8
Discount Rate		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Risk Margin	$53,225	$17,647	$11,246	$8,481	$6,236	$4,483	$2,797	$1,567	$768
Commuted Value	$1,003,448								

The starting point in estimating the commuted value is to estimate the undiscounted value of the liabilities to be commuted and the expected payout of the liabilities. This can be completed using various actuarial approaches. In Table 122, these liabilities are discounted at a risk-free rate corresponding to the average duration of the liabilities to obtain an estimate of discounted liabilities.

The risk margin is estimated based on the cost of holding capital for claims liabilities. In this case, it is assumed that required capital is based on a regulatory approach. For purposes of this example, it is assumed that a margin of 10% of the claims liability is required and that the company must hold target capital equal to 200% of required capital.

The cost of holding capital is equal to the risk cost of capital multiplied by the regulatory capital. The risk cost of capital can be calculated in various ways, such as by calculating a weighted average cost of capital less the risk-free rate. The total risk margin is the present value of the annual cost of capital amounts discounted at the risk-free rate. The commuted value is calculated as the sum of the discounted value of the liabilities plus the risk margin.

PREMIUM LIABILITIES

The policy liabilities of a property/casualty insurance company at a particular valuation date consist of claims liabilities and premium liabilities. Claims liabilities provide for events that have happened prior to the valuation date, whether reported or not. Premium liabilities provide for events that will occur after the valuation date on policies in force on the valuation

date, i.e., premium liabilities are the liabilities associated with the unexpired portion of an insurance or reinsurance contract.

Net premium liabilities are not separately identified on an insurer's balance sheet as a single item but rather are derived by considering the following items:

1. Net unearned premiums
2. Net loss and LAE costs (external and internal) after the valuation date on in-force policies
3. Expected excess of loss reinsurance costs after the valuation date on in-force policies
4. Costs of servicing the in-force policies
5. Provision for premium adjustments
6. Contingent commissions adjustments
7. Unearned reinsurance commissions
8. Deferred policy acquisition expenses
9. Premium deficiency reserves

A property/casualty insurer typically records items 1, 6, 7, and 9 as liabilities on its balance sheet, item 8 is recorded as an asset on the balance sheet, and item 5 can be an asset or a liability. Items 2, 3, and 4 are not recorded on the insurer's financial statements but are used by the actuary in testing the adequacy of the recorded premium liabilities.

In testing the adequacy of premium liabilities, the actuary is comparing an estimate of ultimate costs associated with the unexpired portion of the policy against premium liabilities recorded by the company. This is illustrated below in Table 123 on both gross and net of reinsurance bases.

TABLE 123

ABC Insurance Company
Illustration of Test of Adequacy of Premium Liabilities (CDN$ in 000s)

Gross of Reinsurance Basis		Net of Reinsurance Basis	
A. Unearned Premiums	$ 100,000	A. Unearned Premiums	$ 80,000
B. Expected Losses and External LAE	$ 75,000	B. Excess of Loss Reinsurance Costs	$ 3,000
C. Expected Internal LAE	$ 4,500	C. Expected Losses and External LAE	$ 61,600
D. Expected Maintenance Expenses	$ 2,000	D. Expected Internal LAE	$ 4,500
E. Contingent Commissions	$ 50	E. Expected Maintenance Expenses	$ 2,000
F. Expected Expenses (B+C+D+E)	$ 81,550	F. Contingent Commissions	$ 50
G. Maximum Gross Deferred Acquisition Expense (A-F)	$ 18,450	G. Expected Expenses (B+C+D+E+F)	$ 71,150
		H. Unearned Commissions	$ 150
		I. Maximum Net Deferred Acquisition Expense (A+H-G)	$ 9,000

The elements of this calculation are discussed below (on a net of reinsurance basis as the gross basis is identical with the exception of the items relating to reinsurance ceded):

A. Unearned premiums: These are the company's unearned premiums net of proportional reinsurance.

B. Excess of loss reinsurance costs: This is the expected costs of excess of loss reinsurance associated with unexpired policies. It is typically calculated by applying the subsequent year's excess of loss reinsurance rates to the unearned premium.

C. Expected losses and external LAE: This is the expected losses (net of all reinsurance) for the unexpired portion of the policy. In Canada this is calculated on an AAP basis, i.e., discounted plus a PfAD. There are different ways to calculate this, such as reviewing historical loss and LAE ratios on an AAP basis and selecting an expected AAP loss ratio or by forecasting expected loss and LAE cash flows and then discounting these and adding a PfAD.

D. Expected internal LAE: This provides for the internal costs associated with settling these claims. This is typically calculated by reviewing historical ratios of paid internal LAE to paid losses.

E. Expected maintenance expenses: This is the cost of servicing these in-force policies, other than internal claims handling. This would provide for policy changes, customer inquiries, etc.

F. Contingent commissions: Many insurers have contingent commission arrangements with brokers, which pay additional commissions if certain volume and/or profit targets are met, and this provides for the anticipated cost of these.

G. Expected expenses: The total of items B to F are all costs associated with the unearned premium. The net liability recorded by the company would be the unearned premium plus unearned commissions less the deferred premium acquisition expense (DPAE) asset.

H. Unearned commissions: These are ceding commissions from proportional reinsurance that are not yet earned by the company.

I. Maximum net DPAE: This is the maximum DPAE asset that the company may record given the expected costs and the liability already recorded. If the company, on a provisional basis, has a higher amount recorded, it must be adjusted downward to a level at or below the amount flowing from this calculation. In the event that this amount is negative, the company must record a premium deficiency reserve, which is an additional liability to ensure that all future costs are provided for appropriately.

A number of items above are included in the premium liability component of the actuarial opinion required by OSFI, as part of the Annual Return, as illustrated in Table 124. It is assumed in this case that the company booked $6.5 million as a DPAE asset, which is less than the $9 million calculated by the actuary.

TABLE 124

Premium Liabilities (CDN in 000s)	Carried in Annual Return (Column 1)	Actuary's Estimate (Column 2)
(1) Gross policy liabilities in connection with unearned premiums		81,550
(2) Net policy liabilities in connection with unearned premiums		71,150
(3) Gross unearned premiums	100,000	
(4) Net unearned premiums	80,000	
(5) Premium deficiency	–	–
(6) Other net liabilities	–	–
(7) Deferred policy acquisition expenses	6,500	
(8) Maximum policy acquisition expenses deferrable		9,000
$[(4)+(5)+(9)]_{Col.\ 1} - (2)_{Col.\ 2}$		
(9) Unearned commissions	150	

CHAPTER 29. FINANCIAL HEALTH OF PROPERTY/CASUALTY INSURANCE COMPANIES IN CANADA

RISK-BASED CAPITAL ADEQUACY FRAMEWORK

The Minimum Capital Test (MCT) for federally regulated property/casualty insurance companies and the Branch Adequacy of Asset Test (BAAT) for foreign property/casualty companies operating in Canada on a branch basis (foreign branch) were introduced in 2003 by the Office of the Superintendent of Financial Institutions (OSFI). To simplify their use, effective January 1, 2012, the MCT/BAAT guidelines were consolidated into one document, the MCT guideline. Under this new guideline the MCT/BAAT ratios will also be subject to an independent audit.

The minimum and supervisory target capital standards set out in the MCT guideline published by OSFI provide the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital. Property/casualty companies are required, at a minimum, to maintain an MCT ratio of 100% (minimum capital ratio). OSFI has also set a "supervisory target capital ratio" of 150% to trigger early intervention and provide time for a company to take action to improve its MCT ratio.

OSFI expects companies to establish their own "internal target capital ratio" to reflect their own risk appetite and profile. An adequate internal target capital ratio provides the company with capacity to withstand unexpected losses beyond those covered by the minimum capital ratio. Notwithstanding that a property/casualty company or a foreign branch may meet these standards, the Superintendent has the authority to direct the property/casualty company to increase its capital or the foreign branch to increase the margin of assets over liabilities in Canada.

Typically, the actuary is involved with company management in setting its internal target capital ratio. In setting it, the actuary should consider the following, among other items:

- Nature of the company: Is the company a stock company or mutual company? A stock company has the ability to raise capital and thus may wish to hold enough capital to ensure that it stays above the supervisory target capital ratio (150%) but not so much that it cannot generate its required return on capital. A mutual company cannot raise capital and thus will typically wish to operate at a higher ratio.
- Size of the company: A smaller company or monoline company may have more volatile results and thus wish to hold more capital to ensure that it stays above the supervisory target capital ratio under most circumstances.
- Company reinsurance program: Reinsurance is a form of capital in that it can act to reduce the volatility in loss experience.

- Investment philosophy: Certain investment approaches will require greater capital. That is, if a company does not match assets and liabilities or if a company holds a greater proportion of its investments in equities, more capital may be required.
- Competitive forces: How are others capitalized? If competing companies require less capital to support their business, they may have a pricing advantage.

MINIMUM CAPITAL TEST

In simple terms, the MCT compares capital available to capital required.

CAPITAL AVAILABLE

Capital available is restricted to the following, subject to requirements by OSFI:

- Total equity less accumulated other comprehensive income (AOCI)
- Subordinated indebtedness and redeemable preferred shares
- AOCI (loss) on:
  - Available-for-sale equity securities
  - Available-for-sale debt securities
  - Foreign currency (net of hedging)
  - Share of AOCI on non-qualifying subsidiaries, associates, and joint ventures
- Revaluation losses in excess of gains on own-use properties
- Consolidated non-controlling Interests

Certain items are deducted from/adjusted within the total of capital available, such as:

- Amounts due to/from unregistered reinsurers to the extent they are not covered by deposits or letters of credit held as security
- Interests in non-consolidated subsidiaries and associates
- Interests in joint ventures with more than a 10% ownership interest
- Loans to non-consolidated subsidiaries, associates, and joint ventures with more than a 10% ownership interest considered as capital
- Deferred policy acquisition expenses that are not eligible for either the 0% or 35% capital factor
- Adjustment to own-use property valuations
- Net after-tax impact of shadow accounting
- Deferred tax assets that are not eligible for the 0% capital factor
- Goodwill and other intangible assets
- Other assets, as defined by OSFI, in excess of 1% of total assets
- Accumulated net after-tax fair value gains (losses) arising from changes in a company's own credit risk for the insurer's financial liabilities that are classified as held for trading
- Self-insured retentions where no collateral has been received

- IFRS phase-in adjustment

No capital factor is applied to items that are deducted from capital available.

CAPITAL REQUIRED

The total capital required is the sum of the capital charges for the following:

- Balance sheet assets
- Unpaid claims/unearned premiums and premium deficiencies
- Catastrophes
- Reinsurance ceded to unregistered reinsurers
- Interest rate risk
- Structured settlements, letters of credit, derivatives and other exposures

Capital charges are calculated for the foregoing categories using various approaches. For example, capital charges for balance sheet assets are calculated by applying factors to the balance sheet values of various assets that reflect the risks associated with those assets.

Factors are applied to net unpaid claims (less PfAD) and net unearned premiums. The factors for unpaid claims vary by class of insurance and reflect the potential for variability in the estimates of these amounts, e.g., a 5% factor is applied to property claims, and a 15% factor is applied to liability claims. A uniform factor of 8% is generally applied to unearned premiums across all classes of insurance; however, mortgage and accident and sickness lines of insurance have margins for unearned premiums and unpaid claims that reflect the characteristics of those types of business. A margin of 8% applies to premium deficiency reserves.

Insurers are also required to calculate their margins for unearned premiums, unpaid claims (net of PfAD), and premium deficiencies on a gross basis and multiply the resulting gross margins by 25%. The greater of this calculation and the net margins must be reported as capital required for unearned premiums/unpaid claims/premium deficiencies.

The factor to be applied to unearned premiums and unpaid claims ceded to unregistered reinsurers is 10%. The resulting margin can be reduced to zero by letters of credit and non-owned deposits held as security.

INTEREST RATE RISK

Effective January 1, 2012, insurers must hold capital for interest rate risk. Interest rate risk is the risk of loss from changes in interest rates impacting interest-rate-sensitive assets and liabilities. Assets and liabilities whose value depends on interest rates are impacted; generally, this includes fixed income assets and discounted policy liabilities. The interest rate risk margin is the difference between the change in the value of interest-rate-sensitive assets

and the change in the value of interest-rate-sensitive liabilities arising from a change in interest rates plus the change in the value of allowable interest rate derivatives (only simple derivatives such as interest rate futures, forwards, and swaps may be included).

Interest-rate-sensitive assets include the following:

- Term deposits and other short-term securities (excluding cash)
- Bonds and debentures
- Commercial paper
- Loans
- Mortgages
- Mortgage-backed securities and asset-backed securities
- Preferred shares
- Interest rate derivatives held for other than hedging purposes

Assets held in mutual funds and segregated funds that are interest-rate sensitive are to be included in interest-rate-sensitive assets. All interest-rate-sensitive assets that are held by the insurer are to be included, not just those backing liabilities.

Net unpaid claims and adjustment expenses and net premium liabilities (as determined in accordance with the Canadian Institute of Actuaries (CIA) standards for valuation of policy liabilities) are considered to be the interest-rate-sensitive liabilities.

The interest rate risk margin is calculated as A – B + C where:

A. Estimated change in the value of the interest-sensitive asset portfolio for an interest rate change of X%
B. Estimated change in the value of the interest-sensitive liabilities for an interest rate change X%
C. Estimated change in the value of the allowable interest rate derivatives for an interest rate change X%

The same calculation is completed for an interest rate change of –X%. The interest rate risk margin is the greater of that resulting from a change of X% or –X%.

The change in the value of the interest-rate-sensitive assets and liabilities depends on the duration of the relevant assets and liabilities. Modified duration or effective duration may be used to calculate duration; however, the selected method must be used for all interest-rate-sensitive assets and liabilities and must be used consistently from year to year. The portfolio duration is calculated as a weighted average of the duration of the individual assets or liabilities comprising the portfolio.

The estimated change in the value of the interest rate assets is therefore calculated as duration of the asset portfolio multiplied by fair value of the asset portfolio multiplied by X%.

The estimated change in the value of the interest rate liabilities is therefore calculated as duration of the liabilities multiplied by fair value of the liabilities multiplied by X%. A simple example (ignoring the impact of interest rate derivatives) follows:

Asset duration = 6 years
Fair value of asset portfolio = $500 million
X = 0.50%
Liability duration = 3 years
Fair value of liabilities = $350 million
Capital required = 6 * $500 million *.005 – 3 * $350 million * .005 = $9.75 million

STRUCTURED SETTLEMENTS, LETTERS OF CREDIT, DERIVATIVES, AND OTHER EXPOSURES

Capital required for structured settlements, letters of credit, derivatives, and other exposures are for counterparty risk not covered by the capital required for balance sheet assets. The capital required for these instruments is calculated as follows:

Capital required =
Value of the instrument less collateral or guarantees
* Credit conversion factor (reflects the nature and maturity of the instrument)
* Capital factor (to reflect counterparty default risk).

FOREIGN COMPANIES

Foreign companies operating in Canada on a branch basis are required to maintain an adequate margin of assets over liabilities in respect of their business in Canada. The BAAT provides a framework, similar to the MCT, by which the regulator assesses the adequacy of assets of the branch.

The BAAT is similar to the MCT in that it compares net assets available to margin required. The net assets available are equal to the excess of assets vested in Canada over net liabilities. The margin required is the sum of amounts required for the same items as in the MCT, e.g., assets, policy liabilities, catastrophes, etc.

The regulator also plans to require insurers to hold capital for foreign exchange risk commencing in calendar year 2013.

DYNAMIC CAPITAL ADEQUACY TESTING

Under federal regulation, the appointed actuary must investigate the insurer's financial condition. This is completed by way of Dynamic Capital Adequacy Testing (DCAT).

DCAT is a process of analyzing and projecting the trends of a company's financial condition, given its current financial and operating circumstances, its recent past, and its intended

business plan under a variety of future scenarios. It allows the actuary to inform company management of the likely implications of the business plan on capital and to provide guidance on the significant risks to which the company is exposed.

The principal goal of this process is to help measure capital adequacy by arming the company with the best information on courses of events that may lead to capital depletion and the relative effectiveness of alternative corrective actions. Furthermore, knowing the sources of threat, the company can strengthen the monitoring systems where it is most vulnerable and thus provide information on a continuous and timely basis.

In accordance with accepted actuarial standards, the DCAT process must include a base scenario and several plausible adverse scenarios. The CIA provides guidance as to the risk categories that must be examined for possible threats to capital adequacy. The risk categories enumerated by the CIA are not necessarily the only ones to be examined because the circumstances of the insurer may result in the need to examine other risk categories.

The DCAT process generally consists of the following:

1. Development of a base scenario, which is typically derived from the company's business plan
2. Examination of the risk categories (mandatory or otherwise) to determine those that are relevant to the company circumstances
3. Stress-testing of the risk category in question for each relevant risk category
4. Selection of those scenarios requiring further analysis.
5. Reporting on the results of the analysis

In the most general sense, solvency is the ability of an entity to honor its financial obligations. From the accounting viewpoint, solvency requires that assets equal or exceed liabilities and therefore that the total equity is non-negative. This is ascertained as of a specified date. Even though a balance sheet may show a corporate entity to be technically insolvent by this definition, legal insolvency is only determined through court or regulatory action to terminate the operations of that company. In contrast, the concept of capital adequacy envisioned by DCAT extends beyond the balance sheet at a specific date to the continued vitality of the organization.

Accordingly, in considering the solvency of insurance operations, the amount of and expected trends in surplus and other forms of available capital over the near future are of vital importance, especially in terms of risk profile of the company. It is necessary to consider the purposes of and needs for capital in relation to anticipated and possible events occurring after the statement date.

DCAT utilizes the regulatory formula for the capital adequacy standard. For insurers regulated under the Federal Insurance Companies Act or the Ontario Insurance Act, the minimum regulatory capital requirement for the purposes of the DCAT standard is based upon

the MCT for a Canadian property/casualty insurer and the BAAT for a Canadian branch of a foreign property/casualty insurer. Should an insurer be subject to minimum capital requirements under other jurisdictions, the most restrictive requirement is used.

The company's financial condition is deemed satisfactory if, throughout the forecast period, it is able to meet all its future obligations under the base and all plausible adverse scenarios. In addition, under the base scenario, it must meet the target regulatory capital requirement. Otherwise the company's financial condition is deemed unsatisfactory.

DCAT analysis provides the actuary with significant information about the financial condition of a company. The base scenario is in essence the business plan of the company throughout the forecast period. A review of the business plan should allow the actuary to learn much about the company, including the following:

- Whether the company is growing or contracting through the forecast period and, if relevant, the level at which it is growing
- Whether the company is profitable throughout the period and whether the profits are sufficient to grow the capital base to support the growth of the company
- Planned changes in mix of business written by the company through the forecast period
- Planned changes to reinsurance programs, investment philosophies, expenses, etc.

Further, the adverse scenarios can reveal information about the risk management strategy employed by the company. For example, if a scenario that tests the impact of a change in interest rates has very little impact on the company, it is likely that the company has employed an asset/liability matching strategy to minimize the impact of this event. Adverse scenarios can also identify risks to which the company's financial condition is particularly sensitive, and the actuary can work with management in developing mitigation strategies to manage these risks.

INDUSTRY RESEARCH

Market-Security Analysis and Research, Inc.

Market-Security Analysis and Research, Inc. (MSA) is a Canadian analytical research firm that is focused on the Canadian insurance industry.[211] While MSA is not a rating agency, it publishes many reports and also offers a software tool that allows for comprehensive analysis of company and industry results in significant detail over a number of years. Canadian insurers are also monitored by major rating agencies such as A.M. Best, Standard & Poor's, and Moody's.

[211] MSA Research Inc. http://www.msaresearch.com/. 2006-2012.

Individual company reports are presented by way of a number of exhibits. The first exhibit (Exhibit 1) is titled "Key Company Information." It presents key information about the company's type of license, ownership, and distribution category; identification of the appointed actuary and external auditor; and the name of the CEO or chief agent. There is additional information included in this exhibit for companies with publicly traded parents.

Key financial indicators are included in Exhibit 2. A number of regulatory tests and early warning indicators are included, such as:

- The MCT/BAAT ratio
- Profitability measures such as return on equity, return on revenue, return on assets after tax, and insurance return on net premium earned
- Liabilities as a percentage of liquid assets
- Net loss reserves to equity
- Cash flow from operations to net premiums written
- One-year loss development to equity
- Overall net leverage

The above measures are used by OSFI and other regulatory bodies as early warning solvency indicators. In its reports, MSA flags results that fall outside of OSFI's acceptable range. The MCT/BAAT ratios are OSFI's Risk-Based Capital adequacy assessment and are important measures of a company's financial position. If a company fails this test, it will likely be the subject of regulatory intervention. Often companies fail certain other ratios without being in distress; thus, the actuary should consider results across all of the tests as a whole when making judgments about a company's financial position.

There are also supplementary ratios calculated to provide more summary-level information about the company, including:

- Investment yield (including realized capital gains)
- Change in net premium written
- Change in gross premium written
- Change in equity
- AOCI to equity
- Reinsurance recoverable to equity
- Net underwriting leverage ratio (ratio of net premiums written to equity)
- Two-year combined ratio
- Overall diversification score

PART VIII. THE FUTURE OF SAP

INTRODUCTION TO PART VIII

Regulation and financial reporting of insurance companies has evolved over time. The original FASB accounting standard for insurance entities (FAS 60) was discussed and developed in the 1970s and adopted in June 1982. The NAIC codified its accounting principles in the 1990s. Today we see the joint project of the FASB and the IASB on insurance contracts accounting and the NAIC undertaking a Solvency Modernization Initiative (SMI). So what is driving change and where are we heading?

CHAPTER 30. THE FUTURE OF FINANCIAL REPORTING AND SOLVENCY MONITORING OF INSURANCE COMPANIES

THE NAIC AND THE FINANCIAL SECTOR ASSESSMENT PROGRAM

In *Part VI. Differences from Statutory to other Financial/Regulatory Reporting Frameworks in the U.S.*, we discussed the reasons behind the development of new accounting standards for insurance contracts by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB), including the benefit of having one common language for financial reporting. The National Association of Insurance Commissioners' (NAIC) Solvency Modernization Initiative was started in part because of pressure to conform to new and evolving international standards. In November 2008 at a G20 summit, during the global financial crisis, the G20 members agreed to undergo periodic peer reviews of their financial services regulatory regimes. This peer review process was developed by the International Monetary Fund and World Bank in response to the financial crisis in the late 1990s but had mainly been applied to developing countries. This peer review process is called the Financial Sector Assessment Program (FSAP).

The NAIC underwent the FSAP process during 2010 for the first time. The assessment process benchmarked the U.S. insurance regulatory regime against the Insurance Core Principles (ICPs) developed and published by the International Association of Insurance Supervisors (IAIS). The results of the assessment were generally favorable but were based on the ICPs published in 2003. In October 2011, the IAIS published a revised set of ICPs upon which future FSAP reviews will be based. One area that could pose a challenge to the NAIC is ICP 14 on valuation. The first page of ICP 14 states the following:

"The context and purpose of the valuation of assets or liabilities of an insurer are key factors in determining the values that should be placed on them. This ICP considers the valuation requirements that should be met for the purpose of the solvency assessment of insurers within the context of IAIS risk-based solvency requirements that reflect a total balance sheet approach on an economic basis and address all reasonably foreseeable and relevant risks."

ICP 14 later states that an "economic value should reflect the prospective valuation of the future cash flows of the asset or liability allowing for the riskiness of those cash flows and the time value of money." Some may argue the current statutory valuation of property/casualty liabilities does not comply with this statement as it doesn't reflect the time value of money, except in limited circumstance, nor the underlying risk. Other statements in ICP 14 may allow for some wiggle room, so what remains to be seen is how the next FSAP review of the NAIC will conclude on the current state-based solvency regime of the U.S. insurers against this new "globally accepted framework for the supervision of the insurance sector."

COMFRAME, SOLVENCY II EQUIVALENCE, AND THE FEDERAL INSURANCE OFFICE

In addition to just having completed the revised set of ICPs, the IAIS is developing a Common Framework for the Supervision of Internationally Active Insurance Groups, commonly referred to as ComFrame. To adopt a common framework, there needs to be a common valuation approach to measuring the assets and liabilities of an insurer. Otherwise, it would not be possible for regulators to compare statutory entities and relate them to common requirements. At the time of writing, the proposed valuation approach under ComFrame is International Financial Reporting Standards (IFRS). Given the divergent viewpoints between the FASB and the IASB, this proposal could place U.S. domiciled property/casualty insurance companies with a significant international presence in the position of having to create another set of financial statements in order to be regulated under ComFrame.

While ComFrame is being developed, Solvency II has an assessment process to determine if the regulatory regime in another country is equivalent to its risk-based approach to solvency regulation. A country that is considered equivalent is treated as if it were a European Union member state. This gives an advantage to reinsurers situated in such equivalent countries and to insurance groups with a presence in the equivalent country. Unfortunately, the U.S. will not be considered equivalent in the first phase of countries applying. One of the key reasons is the lack of a countrywide regulator for insurance.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 created the Federal Insurance Office (FIO), which has several functions. The relevant functions are:

- To coordinate federal efforts and develop federal policy on prudential aspects of international insurance matters, including representing the U.S., as appropriate, in the IAIS and assisting the Treasury Secretary in negotiating covered agreements (bilateral or multilateral agreements entered into by the U.S. regarding prudential measures with respect to the business of insurance or reinsurance)
- To determine whether state insurance measures are preempted by covered agreements
- To consult with the states (including state insurance regulators) regarding insurance matters of national importance and prudential insurance matters of international importance

Effectively, this gives the FIO the power to act like a national regulator for purposes of negotiating the contents of ComFrame and seeking Solvency II equivalency as it can preempt state law if the director of the FIO determines that the measure "results in less favorable treatment of a non-U.S. insurer domiciled in a foreign jurisdiction that is subject to a covered agreement than a U.S. insurer domiciled, licensed, or otherwise admitted in that State," and state law "is inconsistent with a covered agreement."

In addition to the FIO, Dodd-Frank gave the Federal government powers to regulate systemically important financial institutions (SIFI). What financial institutions are systemically important is still be determined by the Financial Stability Oversight Council, a body set up by Dodd-Frank to reduce the risk of any one company being "too big to fail." A limited number of property/casualty insurance companies have been identified as being potential SIFIs. For those property/casualty companies that are ultimately determined to be SIFIs, a federal regulatory framework awaits that was originally designed for bank holding companies and has been widely criticized as being ill-suited for insurance company regulation.

THE FUTURE

All the above activities by the NAIC, FASB, IASB, IAIS, and the FIO leave us with a very muddy picture of how insurance liabilities will be evaluated in the future. The common theme, though, is change, as each proposed framework differs from the current valuation of insurance liabilities today. It is also likely that we will see change in the general financial reporting world under U.S. GAAP before we see a change to U.S. statutory accounting. Several scenarios could play out that could leave us with several different frameworks in place. Yet, any of these changes individually would have one common result: a greater need for actuaries to perform the additional calculations and explain the drivers of the results.

GLOSSARY OF TERMS

Accepted Actuarial Practice (AAP)

The manner of performing work in accordance with rules and standards of practice as promulgated by the relevant actuarial body, e.g., American Academy of Actuaries in the U.S. or the Canadian Institute of Actuaries in Canada

Accident year

The calendar year in which the accident occurs and/or the loss is incurred

Accumulated other comprehensive income (AOCI)

The cumulative value of other comprehensive income or the total of unrealized gains on (i) available-for-sale assets such as loans, bonds and debentures and equities; (ii) derivatives designated as cash flow hedges; (iii) foreign currency translation; and (iv) share of other comprehensive income of subsidiaries, associates, and joint ventures. AOCI is included in the equity on the balance sheet of a Canadian insurance company.

Actuarial Opinion Summary (AOS)

A confidential document containing the appointed actuary's range of unpaid claim estimates and/or point estimate, as calculated by the appointed actuary, in comparison to the company's recorded reserves on both a net and gross of reinsurance basis

Actuarial Standards Board (ASB)

"The Actuarial Standards Board (ASB) establishes and improves standards of actuarial practice. These Actuarial Standards of Practice (ASOPs) identify what the actuary should consider, document, and disclose when performing an actuarial assignment. The ASB's goal is to set standards for appropriate practice for the U.S."[212]

Actuarial Standards of Practice (ASOP)

"ASOPs are intended to provide actuaries with a framework for performing professional assignments and to offer guidance on relevant issues, recommended practices, documentation, and disclosure."[213]

Adjusting and other (A&O) expenses

One of the two components of loss adjustment expense, with defense and cost containment being the other. A&O generally include all expenses associated with the

[212] Actuarial Standards Board. *"About the ASB."* http://www.actuarialstandardsboard.org/aboutasb.asp , 2012.
[213] Actuarial Standards Board, *Introduction to the Actuarial Standards of Practice*, http://www.actuarialstandardsboard.org/pdf/asops/Introduction_113.pdf , October 2008.

adjusting and recording of insurance claims, other than those included with defense and cost containment expenses. According to the 2011 National Association of Insurance Commissioners *Annual Statement Instructions Property/Casualty*, A&O expenses are "those expenses that are correlated with claim counts or general loss adjusting expenses."[214]

Alien insurance company

A company doing business in the U.S. that is incorporated under the laws of a country outside the U.S.

Allocated loss adjustment expenses (ALAE)

Expenses associated that can be readily assigned to a specific claim, such as attorney fees.

Alternative minimum taxable income (AMTI)

The lower bound of the income level at which companies are taxed

A.M. Best Company

A global credit rating agency that serves the financial and health care service industries. In the insurance area, Best's Credit Ratings cover property/casualty, life, annuity, reinsurance, captive, title and health insurance companies as well as health maintenance organizations. A.M. Best covers thousands of insurance entities across the globe.

American Academy of Actuaries Committee on Property and Liability Financial Reporting (COPLFR)

"This committee monitors activities regarding financial reporting related to property and liability risks, reviews proposals made by various organizations affecting the actuarial aspects of financial reporting and auditing issues related to property and liability risks, and evaluates property and liability insurance and self-insurance accounting issues."[215]

American Academy of Actuaries Property/Casualty Financial Soundness/Risk Management Committee (FSRM)

"The committee proactively provides actuarial support, advice, and communications on topics that involve the soundness and risk management of property and liability insurance. This includes seeking out additional audiences and topics to address so that the committee can coordinate and respond to issues at the state, federal, and

[214] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 225.

[215] American Academy of Actuaries, "Committee on Property and Liability Financial Reporting," http://www.actuary.org/committees/dynamic/COPLFR, 2012.

international levels. The committee actively interfaces with the NAIC and the Financial Reporting Council's Solvency and Risk Management Task Force. The committee also communicates and provides information to the membership of the Academy regarding these issues."[216]

Amortized cost

"The cost of bonds less the amortization of premium, or plus the accumulated accrual of discount, from the date of purchase to the date of valuation."[217]

Annual Statement

A filing made annually by an insurance company to each state insurance department in which it writes business. The filing is prepared under Statutory Accounting Principles and includes the company's financial statements and various supporting scheduled and exhibits.

Appointed actuary

"A qualified actuary appointed the Board of Directors, or its equivalent, or by a committee of the Board to render a statement of actuarial opinion. 'Qualified Actuary' is a person who is either:

i. A member in good standing of the Casualty Actuarial Society, or
ii. A member in good standing of the American Academy of Actuaries who has been approved as qualified for signing casualty loss reserve opinions by the Casualty Practice Council of the American Academy of Actuaries."[218]

Assets

Resources obtained or controlled by a company as a result of past events that have a probable future economic benefit to the company

Authorized control level (ACL)

The level of Risk-Based Capital within which the state regulatory authority is authorized, but not required, to take control of an insurance company. This level is triggered when a company's total adjusted capital is between 70% and 100% of the ACL benchmark, or 35% to 50% of Risk-Based Capital.

Authorized reinsurer

A reinsurer that is licensed or approved to transact insurance business in a jurisdiction; an unauthorized reinsurer is not.

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[216] American Academy of Actuaries, "Property/Casualty Financial Soundness/Risk Management Committee," http://www.actuary.org/committees/dynamic/SOUNDNESS, 2012.
[217] Insurance Accounting & Systems Association, *Property Casualty Insurance Accounting*, 2006.
[218] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 10.

Balance sheet

The financial statement that presents all of a company's assets and liabilities as of a specific point in time

Branch Adequacy of Asset Test (BAAT)

Guideline for federally regulated property/casualty insurance companies published by the Office of the Superintendent of Financial Institutions that provides the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital

Canadian Institute of Actuaries (CIA)

The national organization of the Canadian actuarial profession

Canadian Institute of Chartered Accountants (CICA)

"The CICA is a not-for-profit entity incorporated by a Special Act of the Canadian Parliament in 1902. … The CICA works in collaboration with the provincial institutes/Ordre to ensure that the profession is well positioned to respond to the challenges and capitalize on the opportunities presented in today's marketplace.

It executes its strategy through:

- supporting the setting of accounting, auditing and assurance standards for business, not-for-profit organizations and government
- developing and delivering pre- and post-qualification education programs
- providing a range of member services and professional literature
- research and development of intellectual property
- issuing guidance on risk management and governance
- fostering relationships with key stakeholders nationally and internationally."[219]

Cap

"An agreement obligating the seller to make payments to the buyer, each payment under which is based on the amount, if any, that a reference price, level, performance or value of one or more Underlying Interests exceed a predetermined number, sometimes called the strike/cap rate or price"[220]

Carryforward of net operating losses

An accounting practice used when an insurance company has net operating losses in one financial year and expects those losses to offset gains in the future, thereby reducing future tax liability

[219] Chartered Accountants of Canada, "About the Canadian Institute of Chartered Accountants (CICA)," http://www.cica.ca/about-cica/index.aspx, 2012.
[220] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.

Carrying value

An initial cost of an investment adjusted over time based on the reporting entity's share in the company's income

Case development

Increases or decreases in the reserves for known claims as additional information becomes available

Case incurred loss

The reported value of a known claim equal to the sum of paid losses plus case outstanding losses

Case outstanding loss

The reserve for a known claims, or case reserve, generally established by the company's claims administrator(s)/handler(s) based either on the facts of the particular claim or based on formula

Case reserves

See definition for *case outstanding loss*

Cash flow statement

A statement that presents a company's operations strictly from a cash perspective

Ceded reinsurance premiums payable

Premiums that are owed to reinsurers relating to ceded reinsurance

Ceding commission

A fee paid by the reinsurer to the insurance company (ceding company) for the reinsurance transaction. The fee is generally expected to reimburse the insurer for policy acquisition expenses.

Certified public accountant (CPA)

"Professional accountant who has passed the uniform CPA examination administered by the American Institute Of Certified Public Accountants, and has fulfilled the educational and work related experience requirements for certification"[221]

Claim frequency

The rate of claim occurrence, typically calculated as the ratio of claim counts to exposures

[221] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/certified-public-accountant-CPA.html, 2012.

Claim severity

The average cost of a claim, typically calculated as the ratio of losses to claim counts

Claims-made policy

An insurance policy covering claims that arise on or after the policy retroactive date and are reported during the term of the policy. The retroactive date may be a date many years before the purchase of the policy. Therefore, a claims-made policy may cover claims made today that result from actions that occurred any time after the retroactive date.

Collar

"An agreement to receive payments as the buyer of an Option, Cap or Floor and to make payments as the seller of a different Option, Cap or Floor"[222]

Common capital stock

A surplus account that is equal to the par value of common stocks that were issued

Common stock

A type of stock holding that confers voting privileges and may pay a dividend, though the dividend is not guaranteed

Commutation of ceded reinsurance

The agreement to fully settle all current and future liabilities associated with a reinsurance agreement for a set payment from the reinsurer

Commuting a claim

A process in which one party is relieved of its obligations in respect of the claim in exchange for a cash payment

Contingent commissions

Additional commissions paid by an insurance company to its broker if certain volume and/or profit targets are met

Contingent liabilities

Amounts for which the insurance company may be held responsible but for which the balance is not currently determinable

[222] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.

Credit risk

A risk that the counterparty will default (or not pay in whole or in part) and the estimation risk associated with amounts recorded for those receivables

Defense and cost containment (DCC)

One of the two components of loss adjustment expense, with adjustment and other expense being the second. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external. According to the 2011 NAIC *Annual Statement Instructions Property/Casualty*, DCC expenses are "those that are correlated with the loss amounts."[223]

Deferred acquisition costs (DAC)

An asset that is established under Generally Accepted Accounting Principles to defer the recognition of acquisition expenses to match the recognition of revenue of insurance companies

Deferred tax assets (DTAs)

Expected future tax benefits related to amounts previously recorded in the statutory financial statements and not expected to be reflected in the tax return as of the reporting date

Derivatives

Financial contracts between two parties for which the value is dependent upon the performance of other assets or variables. Examples include options, warrants, caps, floors, collars, swaps, forwards and futures.

Discount rate

The term commonly used when referring to the rate at which the present value of cash flows are calculated

Discovery year

A calendar year in which a loss or damage is discovered

Dividends received deduction (DRD)

In the case of corporate stockholders, DRDs are certain allowances that are made to reduce tax on dividends to avoid triple taxation when they in turn dividend earnings to their investors

[223] Ibid., page 225.

Dynamic Capital Adequacy Testing (DCAT)

A process of analyzing and projecting the trends of a company's financial condition given its current financial and operating circumstances, its recent past, and its intended business plan under a variety of future scenarios

Earned but unbilled premiums

Estimated adjustments that will occur to the premium on policies where the actual amount of premium depends on an exposure measure (such as payroll) that is unknown until the end of the policy period

Encumbrance

An impediment or claim on an asset made by a party that restricts the value of asset from complete use by the owner until the owner clears its obligation to the other party. An example is a lien on a property.

Equity method

A method under which investments in insurance company subsidiary, controlled and affiliated entities (SCAs) are recorded based on the reporting entity's proportionate share of audited statutory equity of the SCA's balance sheet, adjusted for any unamortized goodwill

Excess treaty reinsurance

A contract under which the reinsurer responds to claims during the treaty period excess of a specified threshold to a specified limit

Exhibit of Capital Gains (Losses)

An Annual Statement exhibit that shows the split of the gains (losses) between those gains (losses) that were realized on the sale or maturity of an asset and those due to impairments

Exhibit of Net Investment Income

An Annual Statement exhibit that differentiates between the amount of income collected and the amount of income earned in the year and describes the deductions for investment expenses and other costs

Facultative reinsurance

A reinsurance contract that is negotiated separately for each insurance policy that is reinsured. Facultative reinsurance is purchased for individual risks that are not covered, or not adequately covered, by the insurer's treaty reinsurance.

Fair value

The value at which an asset or liability could be bought or sold for in the open market

Financial Accounting Standards Board (FASB)

A private organization providing authoritative accounting guidance for non-governmental entities. It has the responsibility of developing and establishing Generally Accepted Accounting Principles, with the Securities and Exchange Commission operating in an overall monitoring role over the accounting standards

Financial Analysis Solvency Tools (FAST)

"NAIC's Financial Analysis Solvency Tools encompasses wide-ranging review/testing system that includes (but is not limited to): (1) a scoring system based on over 20 financial ratios; (2) the Analyst Team System (ATS); (3) RBC trend test; and (4) loss reserve projection tools. Insurers deemed to be performing poorly from the FAST analysis are reviewed by experienced analysts to determine the degree of financial distress present, if any. Insurers deemed to be in financial distress are prioritized by the degree of financial distress and the results are communicated to the state insurance departments in which the insurer is licensed."[224]

Floor

"An agreement obligating the seller to make payments to the buyer, each payment under which is based on the amount, if any, that a predetermined number, sometimes called the strike/floor rate or price exceeds a reference price, level, performance or value of one or more Underlying Interests"[225]

Forward

"An agreement (other than a Future) to make or take delivery of, or effect a cash settlement based on, the actual or expected price, level, performance or value of one or more Underlying Interests"[226]

Future

"An agreement traded on an exchange, Board or Trade or contract market to make or take delivery of, or effect a cash settlement based on, the actual or expected price, level, performance or value of one or more Underlying Interests"[227]

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[224] NAIC, *The United States Insurance Financial Solvency Framework*, http://www.naic.org/documents/committees_e_us_solvency_framework.pdf, 2010, pages 11-12.
[225] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.
[226] Ibid., page 373.
[227] Ibid., page 374.

General expenses

Insurance company operating and administrative expenses other than those that relate directly to the acquisition of the business or ongoing policy maintenance costs incurred by an insurance company

General Interrogatories

A series of questions that the insurance company is required to respond to within its Annual Statement

Generally Accepted Accounting Principles (GAAP)

An accounting framework that provides a consistent set of rules under which publicly traded and privately held companies report their financial transactions

Goodwill

An intangible asset that results from the excess of the price paid for an acquired entity and its book value. It represents the value perceived by the buyer in the company for things like strong customer relationships or trade name, which are not physical or material assets but can be bought or sold due to their relevance to the company's future profitability.

Governmental Accounting Standards Board (GASB)

"The independent organization that establishes and improves standards of accounting and financial reporting for U.S. state and local governments … the official source of generally accepted accounting principles (GAAP) for state and local governments"[228]

Income statement

A statement that describes a company's gain or loss in net income during a specific time period

Incurred but not reported (IBNR)

The reserve for claims that have been incurred but not yet reported to the insurance company. IBNR includes a provision for development on known claims ("case development"), a provision purely for those claims that are incurred but not yet reported to the insurance carriers ("pure IBNR"), and reopened claims.

[228] GASB, "Facts About GASB" http://www.gasb.org/cs/BlobServer?blobcol=urldata&blobtable=MungoBlobs&blobkey=id&blobwhere=1175824006278&blobheader=application%2Fpdf , 2012.

Insurance Expense Exhibit (IEE)

An Annual Statement exhibit that enables regulators to dive deeper into an insurance company's profitability by examining profitability by line of business on a direct and net of reinsurance basis.

Insurance Regulatory Information System (IRIS)

A collection of analytical solvency tools and databases designed to provide state insurance departments with an integrated approach to screening and analyzing the financial condition of insurers. IRIS is used to assist each state in prioritizing which companies need additional regulatory attention

Insurance contract

A contract under which one party (the insurer) accepts significant insurance risk from another party (the policyholder) by agreeing to compensate the policyholder if a specified uncertain future event (the insured event) adversely affects the policyholder

Insurance or underwriting risk

The risk of an insurance company associated with issuing insurance policies

Intercompany pooling

A common arrangement among companies in a group in which each participant fully cedes all of its business to the lead insurance company of the pool, and then each participant assumes back a specific percentage of the total

Interest rate risk

The risk of loss from changes in interest rates impacting interest-rate-sensitive assets and liabilities

Internal Revenue Service (IRS)

The U.S. government agency that is responsible for establishing tax laws and collecting taxes

Internal Target Capital Ratio

The ratio determined by an insurance company intended to provide capacity to withstand unexpected losses beyond those covered by the minimum capital ratio. Canadian property and casualty companies are asked by the Office of the Superintendent of Financial Institutions to establish their own internal target capital ratio.

International Accounting Standards Board (IASB)

"The IASB is the independent standard-setting body of the International Financial Reporting Standards Foundation. Its members are responsible for the development and publication of International Financial Reporting Standards."[229]

International Financial Reporting Standards (IFRS)

The accounting standards promulgated by the International Accounting Standards Board typically used for financial reporting by companies licensed in countries outside of the U.S.

Investment affiliate

An affiliate, other than a holding company, engaged or organized primarily to engage in the ownership and management of investments for the insurer. Investment affiliates exclude entities that manage funds of organizations other than the parent.

Letters of credit

Issued by a bank to guarantee that payment will be made by a borrower to the lender. In the case of reinsurance transactions, a letter of credit guarantees that the reinsurer will be able to meet its obligations to the reinsured. The bank typically charges for this guarantee as a percent of its value. The percentage rate generally rises during periods of uncertain economic times.

Liability

An obligation that the company must fulfill based on past events or transactions that will require the use of monetary resources

Liquidity/Illiquidity premium

In a situation when the ability to readily trade the asset results in a lower discount rate being applied to the tradable asset's future cash flows than that of the privately held asset, the difference in the discount rates is the liquidity/illiquidity premium for the privately held asset.

Loss adjustment expense (LAE)

Expenses associated with the handling of a claim from the time it is reported to the insurance company until the time it is closed. LAE includes allocated loss adjustment expenses (ALAE) and unallocated loss adjustment expenses (ULAE). The National Association of Insurance Commissioners currently uses the defense and cost containment (DCC) and adjusting and other (A&O) expenses to comprise the two forms of LAE. While LAE in total is equivalent under either the ALAE/ULAE or DCC/A&O

[229] IFRS Foundation, "About the IFRS Foundation and the IASB," http://www.ifrs.org/The+organisation/IASCF+and+IASB.htm, 2012.

definitions, it is the segregation of expenses between the two that differs. DCC generally includes defense, litigation and medical cost containment expenses, whether internal or external, and A&O includes all expenses associated with adjusting and recording policy claims, other than those included with DCC.

Mandatorily convertible security

A security that is required to be exchanged for another type of security at a specified price that differs from the market price at the time of conversion

Market-Security Analysis & Research (MSA)

A Canadian analytical research firm that is focused on the Canadian insurance industry

Market valuation approach

A valuation approach in which investment in insurance company subsidiary, controlled and affiliated entities (SCAs) is based on the market value of the SCA, adjusted for the reporting entity's ownership percentage

Maximum net deferred policy acquisition expense (DPAE)

A ceiling to the amount of the DPAE asset that a property/casualty insurance company may record on its financial statements in Canada

Minimum capital ratio

Minimum Capital Test (MCT) ratio of 100%

Minimum capital requirement (MCR)

The smallest level of capital at which a company would be permitted to operate in Canada per the Office of the Superintendent of Financial Institutions

Minimum capital test (MCT)

Guideline for Federally Regulated Property and Casualty Insurance Companies published by the Office of the Superintendent of Financial Institutions that provides the framework within which the Superintendent assesses whether a property/casualty company, or a foreign branch, maintains adequate capital. MCT compares capital available to capital required.

Mortgage-backed security (MBS)

"Debt instrument secured by a mortgage or a pool of mortgages (but not conveying a right of ownership to the underlying mortgage). Unlike unsecured securities, they are considered 'investment grade,' and are paid out of the income generated by principle

and interest payments on the underlying mortgage. It is a type of mortgage derivative."[230]

National Association of Insurance Commissioners (NAIC)

Serves as an organization of state regulators that facilitates and coordinates governance of insurance companies across the U.S.

NAIC Model Investment Law

Allows for two alternative types of investment guidelines:

1. The defined limit system of investment guidelines follows a rule-based approach and prescribes specific quantitative limits for the invested assets that a company may hold.
2. The prudent person system of investment guidelines follows a principles-based approach and requires an insurance company to develop its own investment guidelines.

NAIC's Securities Valuation Office (SVO)

"The National Association of Insurance Commissioners' Securities Valuations Office (SVO) is responsible for the day-to-day credit quality assessment and valuation of securities owned by state regulated insurance companies."[231]

Net income/Net loss

The difference between the amount of the revenues and expenses during the period. It is referred to as net income if it is positive and net loss if it is negative.

Net investment income earned

Interest and dividends received on investment assets held over the course of the year, net of investment expenses including any associated taxes

Net realized capital gain (loss)

Income received related to changes in the value of investment assets that are held, net of any associated taxes

Nonadmitted assets

Assets that are not recognized by state insurance departments in evaluating the solvency of an insurance company for statutory accounting purposes

[230] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/mortgage-backed-security.html, 2012.

[231] Per the description of the Securities Valuation Office on the NAIC and The Center for Insurance Policy and Research website, http://www.naic.org/svo.htm, 2012.

Notes to Financial Statements

Qualitative and quantitative disclosures made by a company to further explain the balances shown in its financial statements

Off-balance sheet and other items

Amounts that are not recorded by the insurance company in its statutory financial statements yet still represent assets and/or potential liabilities of the insurance company and therefore expose the company to risk

Office of the Superintendent of Financial Institutions (OSFI)

The organization that supervises all federally regulated financial institutions, monitors federally regulated pension plans and provides actuarial advice to the Government of Canada

Option

"An agreement giving the buyer the right to buy or receive, sell or deliver, enter into, extend or terminate, or effect a cash settlement based on the actual or expected price, level, performance or value of one or more Underlying Interests"[232]

Other comprehensive income (OCI)

Changes in unrealized gains and losses on (i) available for sale assets such as loans, bonds and debentures and equities; (ii) derivatives designated as cash flow hedges; (iii) foreign currency translation; and (iv) share of OCI of subsidiaries, associates and joint ventures. OCI is required by International Financial Reporting Standards.

Overdue authorized reinsurance

Reinsurance for which the amount of paid loss and loss adjustment expense recoverable is more than 90 days past due for reasons other than dispute between the insurance company and the reinsurer

Own risk self-assessment (ORSA)

The entirety of the processes and procedures employed to identify, assess, monitor, manage and report the short- and long-term risks a (re) insurance undertaking faces or may face and to determine the own funds necessary to ensure that the undertaking's overall solvency needs are met at all times.

Paid losses

Amounts paid by the insurance carrier for insured claims

[232] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.

Par value

An amount set by the issuer of a stock when the stock is initially offered, which serves as a minimum value for which the stock can be sold in that initial offering

Policyholder dividend

A return to the policyholder of a portion of the premium that was originally paid by the policyholder. There are typically state requirements that must be met for a company to pay dividends.

Preferred stock

A stock holding that does not confer voting privileges but usually provides a guarantee on dividends to be paid and usually has preference to common stock in the event of liquidation

Premium deficiency reserve

A reserve that must be recorded when the unearned premium of in-force business is not sufficient to cover the losses, loss adjustment expense and other expenses that will arise when that premium is earned.

Proportional treaty

A contract under which the reinsurer receives a set proportion of all premiums subject to the treaty, net of ceding commission, and in return pays the same proportion of all claims subject to the treaty

Protected cell company

A company that comprises individual cells, each with its own assets, liabilities and equity, but that also has access to a part of the company's overall capital. The liability to each cell is limited such that creditors to one cell cannot look to another cell or the company as a whole for assets.

Provision for adverse deviation (PfAD)

A provision required in Canada for adverse deviation in a company's loss reserves determined by increasing the value of variables used in the reserve estimation process.

Provision for reinsurance

A penalty for reinsurance recoverables that may not be collectible. The amount of this provision is a reduction to surplus. This penalty applies to unauthorized reinsurers that do not provided full collateral, that are slow to pay or that have disputed amounts owed to the ceding company, as well as the authorized reinsurers that are slow to pay or that have disputed amounts that are owed to the ceding company.

Regulation S-X

The Security Exchange Commission's regulation that contains general instructions to all companies around the composition and presentation of financial statements

Reinsurance contract

Oftentimes considered insurance for insurance companies, a contract under which one party (the insurer or reinsured) transfers risk to another party (the reinsurer) to protect the insurer (reinsured) from financial loss

Replication (synthetic asset) transaction

A derivative transaction entered into in conjunction with other investments to reproduce the investment characteristics of otherwise permissible investments

Report year

A calendar year in which losses are reported

Reported loss

Amount of paid plus case outstanding losses incurred by an insurance company. It represents the dollar value of loss known to the insurance company. Reported loss is synonymous with the term case incurred loss.

Reserve risk

The risk that a reporting entity's loss and loss adjustment expense reserves will develop adversely

Retroactive date

The date specified in a claims-made insurance policy that defines the first day on which incurred losses are covered under the policy

Retroactive reinsurance

Reinsurance that is purchased for liabilities that occurred in the past (i.e., prior to the effective date of the reinsurance policy)

Revenue offset

A reduction in earned premium to account for a lack of deferred acquisition costs.

Review date

The valuation date through which material information known to the actuary is included in forming the reserve opinion

Risk-Based Capital (RBC)

A solvency framework developed by the National Association of Insurance Commissioners from which an amount of capital is determined formulaically based on the application of specified factors to an insurance company's recorded assets and liabilities as of year-end. The calculated capital, or RBC, is compared to that recorded by the insurance company at year-end to determine the level, if any, of company or regulatory action required from a solvency perspective.

Risk-Based Capital ratio (RBC ratio)

The ratio of total adjusted capital to the authorized control level benchmark computed under the National Association of Insurance Commissioners RBC framework

Schedule A

A schedule within an Annual Statement that provides information on real estate directly owned by the insurance company

Schedule B

A schedule within an Annual Statement that provides information on mortgage loans owned by the insurance company that are backed by real estate

Schedule BA

A schedule within an Annual Statement that provides information on other long-term invested assets owned by the insurance company. These are assets not included in any of the other invested asset schedules, such as real estate, that is not owned directly by the insurance company and therefore excluded from Schedule A.

Schedule D

A schedule within an Annual Statement that provides information on bonds and stocks owned by the insurance company

Schedule DA

A schedule within an Annual Statement that provides information on short-term investments owned by the insurance company. The schedule includes all investments whose maturities (or repurchase dates under repurchase agreement) at the time of acquisition were one year or less except those defined as cash or cash equivalents in accordance with SSAP No. 2, Cash, Drafts, and Short-term Investments.

Schedule DB

A schedule within an Annual Statement that provides the number of contracts for each derivative and the notional amount, which represents the number of units of the underlying asset that are involved

Schedule DL

A schedule within an Annual Statement that provides information on securities lending reinvested assets

Schedule E

A schedule within an Annual Statement that provides information on the insurance company's cash and cash equivalents

Schedule F

A schedule within an Annual Statement that provides information on an insurance company's assumed and ceded reinsurance transactions

Schedule P

A schedule within an Annual Statement that provides loss and loss expenses reserves gross and net and also breaks down the total reserves by line of business and accident year

Schedule P interrogatories

A series of questions that the insurance company is required to answer to provide further insight into the information reported in Schedule P

Schedule T

A schedule within an Annual Statement that provides an allocation of its contents by U.S. state (50) and the District of Columbia, as well as five U.S. territories (American Samoa, Guam, Puerto Rico, U.S. Virgin Islands and Northern Mariana Islands), Canada, and "aggregate other alien" territories

Securities and Exchange Commission (SEC)

The authoritative body for establishing accounting and reporting standards for publicly traded companies in the U.S.

Solvency capital requirement (SCR)

An amount of capital required to limit the probability of ruin over the forthcoming year to 0.5%

Solvency Modernization Initiative (SMI)

An initiative of the National Association of Insurance Commissioners that involves "a critical self-examination of the U.S. insurance solvency regulation framework and includes a review of international developments regarding insurance supervision,

banking supervision, and international accounting standards and their potential use in U.S. insurance regulation."[233]

Statement of Actuarial Opinion (SAO)

The opinion of a qualified actuary on the reasonableness of the loss and loss adjustment expense reserves recorded by a property/casualty insurance company as of December 31 each year

Statement of cash flows

A statement that shows cash inflows and outflows from a company's operations, investments, financing and other sources, the net value of which is included as the value of cash and cash equivalents that is shown on the on the balance sheet at the end of the reporting period

Statement of Changes in Equity exhibit

A statement included within the financials of a Canadian insurance company Illustrating the change in equity across the various classes of equity (e.g., share capital, retained earnings, available for sale financial assets) resulting from various transactions or events such as issue of share capital, total comprehensive income for the year, dividends, etc.

Statement of retained earnings

A statement included within the financials of a Canadian insurance company that provides the calculation of the retained earnings for the insurance company at the end of the reporting period

Statutory Accounting Principles (SAP)

The accounting framework that all U.S. insurance companies are required to report under for state regulatory purposes: "accounting principles or practices prescribed or permitted by an insurer's domiciliary state"[234]

Structured settlements

A situation where an insurance company settles a claim by purchasing an annuity on behalf of a claimant

[233] NAIC, "Key Issue: The national System of State Regulation and the Solvency Modernization Initiative," http://www.naic.org/index_smi.htm, August 31, 2012.
[234] NAIC, *Accounting Practices and Procedures Manual*, Volume I, March 2009, page P-2.

Surplus (policyholders' surplus)

The difference between assets and liabilities is generally referred to as net worth, and, in the specific case of an insurance company under statutory accounting, it is referred to as surplus.

Surplus aid

An amount of enhancement to surplus in the current period as a result of ceding commission that has been taken into income on its ceded unearned premium

Surplus ratio

A ratio of mean policyholders' surplus to the sum of mean net loss and loss adjustment reserves, mean net unearned premium reserves and current year net earned premiums, in total for all lines combined

Swap

"An agreement to exchange or net payments at one or more times based on the actual or expected price, level, performance or value of one or more Underlying Interests or upon the probability occurrence of a specified credit or other event"[235]

Sweep account

"Banking arrangement in which a checking (current) account balance above or below a certain amount is automatically transferred to and from an interest-bearing (savings or money market fund) account. The objective of a sweep account is to maximize the accountholder's interest earnings while covering all withdrawals."[236]

Tabular reserves

Indemnity reserves that are calculated using discounts determined with reference to actuarial tables that incorporate interest and contingencies such as mortality, remarriage, inflation or recovery from disability applied to a reasonably determinable payment stream. This definition does not include medical loss reserves or any LAE reserves.

Tail coverage

Coverage issued as an endorsement to a claims-made policy that covers claims incurred after the retroactive date but reported to the insurer subsequent to the claims-made policy expiration date.

[235] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.

[236] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/sweep-account.html, 2012.

Tax-basis earned premium

Earned premium adjusted for a revenue offset

Tax-basis incurred losses and expenses

Statutory calendar-year incurred paid losses plus the change in discounted loss reserves

Total comprehensive income

Net income as reported by Canadian insurance companies on the Statement of Income plus other comprehensive income

Treaty reinsurance

A reinsurance contract that applies to all or a portion of an insurance company's policies written during the term of the reinsurance agreement, typically a calendar year

Unallocated loss adjustment expenses (ULAE)

Expenses associated with the handling of claims that are not generally assigned to a particular claim, such as salaries for adjustors and utility costs

Underwriting income

Earned premium minus loss and LAE incurred and other underwriting expenses incurred

Unearned commissions

Ceding commissions from reinsurance that are not yet earned by the insurance company

Unearned premiums

The premium that corresponds to the time period remaining on an insurance policy prior to expiration

Unpaid loss (or loss reserve)

Amount of case outstanding plus incurred but not reported reserves. It represents the remaining amount expected to be paid on claims incurred by the insurance company.

Value at risk

"Largest loss likely to be suffered on a portfolio position over a holding period with a given probability (confidence level)"[237]

[237] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/value-at-risk-VAR.html, 2012.

Warrant

"An agreement that gives the holder the right to purchase and underlying financial instrument at a given price and time or at a series of prices and times according to a schedule or warrant agreement"[238]

Written premium risk

A risk that future business written by the company will be unprofitable

Yield curve

"Graph used typically to show yields for different bond maturities and used for determining the best value in bonds and as an economic indicator (confidence level)"[239]

[238] *2011 NAIC Annual Statement Instructions Property/Casualty*, page 373.
[239] BusinessDictionary.com, *Definitions,* http://www.businessdictionary.com/definition/yield-curve.html, 2012.

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APPENDICES

APPENDIX I. FICTITIOUS INSURANCE COMPANY

EXCERPTS FROM THE 2011 ANNUAL STATEMENT FOR FICTITIOUS INSURANCE COMPANY

ANNUAL STATEMENT

OF THE

FICTITIOUS INSURANCE COMPANY

Of

Sunny City
in the state of Florida

* * Selected Excerpts ONLY * *

to the Insurance Department
of the state of Florida

For the Year Ended
December 31, 2011

2011

ASSETS

		Current Year			Prior Year
		1 Assets	2 Non-Admitted Assets	3 Net Admitted Assets (Cols. 1 - 2)	4 Net Admitted Assets
1.	Bonds (Schedule D)	58,676,000	0	58,676,000	58,861,000
2.	Stocks (Schedule D):				
	2.1 Preferred Stocks	34,000	0	34,000	35,000
	2.2 Common Stock	19,408,000	68,000	19,340,000	19,081,000
3.	Mortgage Loans on real estate (Schedule B):				
	3.1 First Liens	238,000	0	238,000	245,000
	3.2 Other than first liens	7,000	0	7,000	0
4.	Real Estate (Schedule A):				
	4.1 Properties Occupied by the company (less $.....0 Encumbrances)	453,000	0	453,000	472,000
	4.2 Properties held for the production of income (less $.....0 Encumbrances)	3,359,000	0	3,359,000	3,274,000
	4.3 Properties held for sale (less $.....0 encumbrances)	33,000	0	33,000	0
5.	Cash ($.....153,000 Sch. E-Part 1), cash equivalents ($.....0 Sch. E-Part 2) and short-term investments ($.....829,000, Sch DA)	983,000	0	983,000	1,233,000
6.	Contract loans (Including $0 premium notes)	0	0	0	0
7.	Derivatives (Schedule DB)	0	0	0	0
8.	Other invested assets (Schedule BA)	4,726,000	98,000	4,628,000	4,405,000
9.	Receivables for securities	0	0	0	0
10.	Securities lending reinvested collateral assets (Schedule DL)	79,000	0	79,000	183,000
11.	Aggregate write-ins for invested assets	(5,000)	0	(5,000)	(5,000)
12.	Subtotal, cash and invested assets (Lines 1 to 11)	87,991,000	166,000	87,825,000	87,784,000
13.	Title plants less $...0 charged off (For Title insurers only)	0	0	0	0
14.	Investment income due and accrued	726,000	0	726,000	750,000
15.	Premiums and Considerations:				
	15.1 Uncollected premiums and agent's balances in course of collection	2,870,000	244,000	2,626,000	2,866,000
	15.2 Deferred premiums, agents balances and installments booked but deferred and not yet due (Including $... 60,000 earned but unbilled premium)	5,153,000	39,000	5,114,000	4,927,000
	15.3 Accrued retrospective premium	254,000	4,000	250,000	263,000
16.	Reinsurance:				
	16.1 Amounts recoverable from reinsurers	426,000	0	426,000	451,000
	16.2 Funds held by or deposited with reinsured companies	0	0	0	0
	16.3 Other amounts receivable under reinsurance contracts	0	0	0	0
17.	Amounts receivable relating to uninsured plans	0	0	0	0
18.1	Current federal and foreign income tax recoverable and interest thereon	233,000	0	233,000	0
18.2	Net deferred tax asset	3,082,000	878,000	2,204,000	1,979,000
19.	Guaranty funds receivable or on deposit	9,000	0	9,000	14,000
20.	Electronic data processing equipment and software	1,000	0	1,000	1,000
21.	Furniture and equipment, including health care delivery assets($...0)	88,000	88,000	0	0
22.	Net adjustment in assets and liabilities due to foreign exchange rates	0	0	0	0
23.	Receivables from parent, subsidiaries and affiliates	0	0	0	0
24.	Health care ($...0) and other amounts receivable	0	0	0	0
25.	Aggregate write-ins for other than invested assets	621,000	35,000	586,000	641,000
26.	Total Assets excluding Separate Accounts, segregated Accounts and Protected Cell Accounts (Lines 12 to 25)	101,454,000	1,454,000	100,000,000	99,676,000
27.	From Separate Accounts, Segregated Accounts and Protected Cell Accounts	0	0	0	0
28.	TOTALS (Lines 26 and 27)	101,454,000	1,454,000	100,000,000	99,676,000

LIABILITIES, SURPLUS AND OTHER FUNDS

		1 Current Year	2 Prior Year
1.	Losses (Part 2A, Line 35, Column 8)	41,894,000	40,933,000
2.	Reinsurance payable on paid losses and loss adjustment expenses (Schedule F , Part 1, Column 6)	0	0
3.	Loss adjustment expenses (Part 2A, Line 35, Col 9)	9,663,000	9,664,000
4.	Commissions payable, contingent commissions and other similar charges	763,000	721,000
5.	Other expenses (excluding taxes, licenses, and fees)	668,000	658,000
6.	Taxes, licenses, and fees (excluding federal and foreign income taxes)	501,000	523,000
7.1	Current federal and foreign income taxes (including $...0 on realized capital gains (losses))	0	120,000
7.2	Net deferred tax liability	0	0
8.	Borrowed money $ …. 0 and interest thereon $.... 0	0	0
9.	Unearned Premiums (Part 1A, Line 38, Col 5)(after deducting unearned premiums for ceded reinsurance of $ 920,000 and including warranty reserves of $...0 and accrued accident and health experience rating refunds including $...0 for medical loss ratio rebate per the Public Health Service Act)	11,895,000	11,557,000
10.	Advance premium	0	0
11.	Dividends declared and unpaid:		
	11.1 Stockholders	1,500,000	1,500,000
	11.2 Policyholders	62,000	50,000
12.	Ceded reinsurance premiums payable (net of ceding commissions)	440,000	608,000
13.	Funds held by company under reinsurance treaties (Schedule F, Part 3, Col 19)	170,000	128,000
14.	Amounts withheld or retained by account of others	308,000	255,000
15.	Remittances and items not allocated	57,000	28,000
16.	Provision for reinsurance (Schedule F, Part 7)	283,000	272,000
17.	Net adjustments in assets and liabilities due to foreign exchange rates	31,000	(12,000)
18.	Drafts outstanding	0	0
19.	Payable to parent, subsidiaries and affiliates	0	0
20.	Derivatives	0	63,000
21.	Payable for securities	287,000	3,000
22.	Payable for securities lending	79,000	183,000
23.	Liability for amounts held under uninsured plans	0	0
24.	Capital notes $...0 and interest thereon $.....0	0	0
25.	Aggregate write-ins for liabilities	375,000	814,000
26.	Total liabilities excluding protected cell liabilities (Lines 1 through 25)	68,976,000	68,068,000
27.	Protected cell liabilities	0	0
28.	Total liabilities (Lines 26 and 27)	68,976,000	68,068,000
29.	Aggregate write-ins for special surplus funds	848,000	777,000
30.	Common capital stock	108,000	108,000
31.	Preferred capital stock	0	0
32.	Aggregate write-ins for other than special surplus funds	0	0
33.	Surplus notes	0	0
34.	Gross paid in and contributed surplus	17,585,000	17,585,000
35.	Unassigned funds (surplus)	12,483,000	13,138,000
36.	Less treasury stock, at cost	0	0
37.	Surplus as regards policyholders (Lines 29 to 35, less 36) (Page 4, Line 39)	31,024,000	31,608,000
38.	TOTALS (Page 2, Line 28, Col. 3)	100,000,000	99,676,000

DETAILS OF WRITE-INS

2501.	Other Liabilities	2,000	2,000
2502.	Investment real estate liability	94,000	92,000
2503.	Interest deposit liability	3,000	3,000
2598.	Summary of remaining write-ins	276,000	717,000
2599.	Totals (Lines 2501 through 2503 plus 2598) (Line 25 above)	375,000	814,000
2901.	Special surplus for deferred taxes	703,000	608,000
2902.	Special surplus from retroactive reinsurance	140,000	163,000
2903.	Guaranty surplus fund	5,000	5,000
2998.	Summary of remaining write-ins	0	0
2999.	Totals (Lines 2901 through 2903 plus 2998) (Line 29 above)	848,000	777,000

STATEMENT OF INCOME

	UNDERWRITING INCOME	1 Current Year	2 Prior Year
1.	Premiums earned (Part 1, Line 35, Column 4)	26,512,000	25,535,000
	DEDUCTIONS		
2.	Losses incurred (Part 2, line 35, Column 7)	16,907,000	12,798,000
3.	Loss adjustment expenses incurred (Part 3, line 25, Column 1)	3,255,000	3,008,000
4.	Other underwriting expenses incurred (Part 3, line 25, Column 2)	8,483,000	8,240,000
5.	Aggregate write-ins for underwriting deductions	0	1,000
6.	Total underwriting deductions (Lines 2 through 5)	28,645,000	24,047,000
7.	Net Income of protected cells	0	0
8.	Net underwriting gain (loss) (Line 1 minus line 6 plus line 7)	(2,133,000)	1,488,000
	INVESTMENT INCOME		
9.	Net investment income earned (Exhibit of Net Investment Income, Line 17)	4,290,000	4,860,000
10.	Net realized capital gains (losses) less capital gains tax of $... 99,000 (Exhibit of Capital Gains (Losses))	15,000	(445,000)
11.	Net investment gain (loss) (Lines 9 + 10)	4,305,000	4,415,000
	OTHER INCOME		
12.	Net gain (loss) from agents' or premium balances charged off (amount recovered $65,000)	(78,000)	(74,000)
13.	Finance and service charges not included in premiums	122,000	124,000
14.	Aggregate write-ins for miscellaneous income	(11,000)	(3,000)
15.	Total other income (Lines 12 through 14)	33,000	47,000
16.	Net income before dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes (Lines 8 + 11 + 15)	2,205,000	5,950,000
17.	Dividends to policyholders	46,000	32,000
18.	Net income, after dividends to policyholders, after capital gains tax and before all other federal and foreign income taxes (Line 16 minus Line 17)	2,159,000	5,918,000
19.	Federal and foreign income taxes incurred	(20,000)	963,000
20.	Net income (Line 18 minus Line 19) (to Line 22)	2,179,000	4,955,000
	CAPITAL AND SURPLUS ACCOUNT		
21.	Surplus as regards policyholders, December 31 Prior year (Page 4, Line 39, Column 2)	31,609,000	35,793,000
22.	Net income (From Line 20)	2,179,000	4,955,000
23.	Net transfers (to) from Protected Cell accounts	0	0
24.	Change in net unrealized capital gains or (losses) less capital gains tax of $ …7,000	81,000	119,000
25.	Change in net unrealized foreign exchange capital gain (loss)	(122,000)	66,000
26.	Change in net deferred income tax	14,000	(243,000)
27.	Change in nonadmitted assets (Exhibit of Nonadmitted Assets, Line 28 Column 3)	(13,000)	498,000
28.	Change in provision for reinsurance (Page 3, Line 16, Column 2 minus Column 1)	(11,000)	124,000
29.	Change in surplus notes	0	0
30.	Surplus (contributed to) withdrawn from protected cells	0	0
31.	Cumulative effect of changes in accounting principles	0	0
32.	Capital changes:		
	32.1 Paid in	0	0
	32.2 Transferred from surplus (Stock dividend)	0	0
	32.3 Transferred to surplus	0	0
33.	Surplus Adjustments:		
	33.1 Paid in	0	361,000
	33.2 Transferred to capital (Stock Dividend)	0	0
	33.3 Transferred from Capital	0	0
34.	Net remittances from or (to) Home Office	0	0
35.	Dividends to stockholders	(2,617,000)	(10,023,000)
36.	Change in treasury stock (Page 3, Line 36, Column 2 minus Column 1)	0	0
37.	Aggregate write-ins for gains and losses in surplus	(96,000)	(42,000)
38.	Change in surplus as regards policyholders for the year (Lines 22 through 37)	(585,000)	(4,185,000)
39.	Surplus as regards policyholders, December 31 current year (Line 21 plus Line 38) (Page 3, Line 37)	31,024,000	31,608,000

CASH FLOW

		1 Current Year	2 Prior Year
	CASH FROM OPERATIONS		
1.	Premiums collected net of Reinsurance	26,881,000	25,228,000
2.	Net Investment Income	4,618,000	5,442,000
3.	Miscellaneous Income	33,000	48,000
4.	Total (Lines 1 through 3)	31,532,000	30,718,000
5.	Benefit and loss related payments	15,952,000	13,249,000
6.	Net transfers to Separate Accounts, Segregated Accounts and Proteced Cell Accounts	0	0
7.	Commissions, expenses paid and aggregate write-ins for deductions	11,710,000	11,647,000
8.	Dividends Paid to Policyholders	58,000	32,000
9.	Federal and foreign income taxes paid (recovered) net of $..... Tax on capital gains (losses)	423,000	757,000
10.	Total (Lines 5 though 9)	28,143,000	25,685,000
11.	Net cash from operations (Line 4 minus Line 10)	3,389,000	5,033,000
	CASH FROM INVESTMENTS		
12.	Proceeds from Investments sold, matured or repaid:		
	12.1 Bonds	3,627,000	11,371,000
	12.2 Stocks	241,000	596,000
	12.3 Mortgage Loans	5,000	16,000
	12.4 Real Estate	0	49,000
	12.5 Other invested assets	786,000	363,000
	12.6 Net gains or (losses) on cash, cash equivalents and short-term investments	0	0
	12.7 Miscellaneous proceeds	104,000	7,000
	12.8 Total investment proceeds (Lines 12.1 to 12.7)	4,763,000	12,402,000
13.	Cost of investments acquired (long-term only):		
	13.1 Bonds	9,661,000	5,845,000
	13.2 Stocks	386,000	1,230,000
	13.3 Mortgage Loans	14,000	4,000
	13.4 Real Estate	277,000	77,000
	13.5 Other invested assets	965,000	1,213,000
	13.6 Miscellaneous applications	(284,000)	0
	13.7 Total investments acquired (Lines 13.1 to 13.6)	11,019,000	8,369,000
14.	Net increase (decrease) in contract loans and premium notes	0	0
15.	Net cash from investments (Line 12.8 minus Lines 13.7 minus Line 14)	(6,256,000)	4,033,000
	CASH FROM FINANCING AND MISCELLANEOUS SOURCES		
16.	Cash provided (applied):		
	16.1 Surplus notes, capital notes	0	0
	16.2 Capital and paid in surplus, less treasury stock	0	362,000
	16.3 Borrowed funds	0	0
	16.4 Net deposits on deposit-type contracts and other insurance liabilities	0	0
	16.5 Dividends to stockholders	(2,617,000)	10,025,000
	16.6 Other cash provided (applied)	0	0
17.	Net cash from financing and miscellaneous source (Line 16.1 to 16.4 minus line 16.5 plus line 16.6)	2,617,000	(9,663,000)
	RECONCILIATION OF CASH, CASH EQUIVALENTS AND SHORT TERM INVESTMENTS		
18.	Net change in cash, cash equivalents and short-term investments (Line 11 plus line 15 plus line 17)	(250,000)	(597,000)
19.	Cash, cash equivalents and short-term investments:		
	19. Beginning of year	1,233,000	1,830,000
	19.2 End of year (line 18 plus line 19.1)	983,000	1,233,000

Note: supplemental disclosures of cash flow information for non-cash transactions

20.0001	Exchange of stock	10,000	0
20.0002	Bonds converted to stock	0	0
20.0003	Capital contribution	0	362,000

ANNUAL STATEMENT FOR THE YEAR 2011 OF THE FICTITIOUS INSURANCE COMPANY

UNDERWRITING AND INVESTMENT EXHIBIT

PART 1- PREMIUMS EARNED

	Line of Business	1 Net Premiums Written per Column 6, Part 1B	2 Unearned Premiums Dec. 31 Prior Year - per Col 3, Last Year's Part 1	3 Unearned Premiums Dec 31. Current Year - per Col. 5 Part 1A	4 Premiums Earned During Year (Cols. 1 + 2 -3)
1.	Fire	2,484,000	1,158,000	1,133,000	2,509,000
2.	Allied Lines	0	0	0	0
3.	Farmowners multiple peril	0	0	0	0
4.	Homeowners multiple peril	4,555,000	2,290,000	2,400,000	4,445,000
5.	Commercial multiple peril	4,677,000	2,139,000	2,123,000	4,693,000
6.	Mortgage guaranty	0	0	0	0
8.	Ocean marine	0	0	0	0
9.	Inland marine	0	0	0	0
10.	Financial guaranty	0	0	0	0
11.1	Medical professionial liability - occurrence	0	0	0	0
11.2	Medical professionial liability - claims-made	0	0	0	0
12.	Earthquake	0	0	0	0
13.	Group accident and health	0	0	0	0
14.	Credit accident and health (group and individual)	0	0	0	0
15.	Other accident and health	0	0	0	0
16.	Workers' compensation	4,022,000	1,441,000	1,520,000	3,943,000
17.1	Other liability - occurrence	3,502,000	1,695,000	1,649,000	3,548,000
17.2	Other liability - claims-made	0	0	0	0
17.3	Excess workers' compensation	0	0	0	0
18.1	Products liability - occurrence	0	0	0	0
18.2	Products liability- claims-made	0	0	0	0
19.1, 19.2	Private passage auto liability	2,804,000	882,000	954,000	2,732,000
19.3, 19.4	Commercial auto liability	2,250,000	987,000	1,014,000	2,223,000
21.	Auto physical damage	2,312,000	811,000	845,000	2,278,000
22.	Aircraft (all perils)	0	0	0	0
23.	Fidelity	146,000	48,000	53,000	141,000
24.	Surety	0	0	0	0
26.	Burglary and theft	0	0	0	0
27.	Boiler and machinery	0	0	0	0
28.	Credit	0	0	0	0
29.	International	0	0	0	0
30.	Warranty	0	0	0	0
31.	Reinsurance - nonproportional assumed property	0	0	0	0
32.	Reinsurance - nonproportional assumed liability	0	0	0	0
33.	Reinsurance - nonproportional assumed financial lines	0	0	0	0
34.	Aggregate write-ins for other lines of business	0	0	0	0
35.	TOTALS	26,752,000	11,451,000	11,691,000	26,512,000

DETAILS OF WRITE-INS

3401.		0	0	0	0
3402.		0	0	0	0
3403.		0	0	0	0
3498.	Summary of remaining write-ins for line 34 from overflow page	0	0	0	0
3499.	Totals (Lines 3401 through 3403 plus 3498) (Line 34 above)	0	0	0	0

UNDERWRITING AND INVESTMENT EXHIBIT

PART 1A - RECAPITULATION OF ALL PREMIUMS

	Line of Business	1 Amount Unearned (Running One Year or Less from Date of Policy) (a)	2 Amount Unearned (Running More Than One Year from Date of Policy (a)	3 Earned but Unbilled Premium	4 Reserve for Rate Credits and Retrospective Adjustments Based on Experience	5 Total Reserve for Unearned Premiums Cols 1 + 2 + 3 + 4
1.	Fire	1,026,000	116,000	(9,000)	0	1,133,000
2.	Allied Lines	0	0	0	0	0
3.	Farmowners multiple peril	0	0	0	0	0
4.	Homeowners multiple peril	2,400,000	0	0	0	2,400,000
5.	Commercial multiple peril	2,111,000	22,000	(10,000)	0	2,123,000
6.	Mortgage guaranty	0	0	0	0	0
8.	Ocean Marine	0	0	0	0	0
9.	Inland Marine	0	0	0	0	0
10.	Financial guaranty	0	0	0	0	0
11.1	Medical professionial liability - occurrence	0	0	0	0	0
11.2	Medical professionial liability - claims made	0	0	0	0	0
12.	Earthquake	0	0	0	0	0
13.	Group accident and health	0	0	0	0	0
14.	Credit accident and health	0	0	0	0	0
15.	Other accident and health	0	0	0	0	0
16.	Worker's Compensation	1,689,000	1,000	(32,000)	(138,000)	1,520,000
17.1	Other liability - occurrence	1,546,000	104,000	0	(1,000)	1,649,000
17.2	Other liability - claim made	0	0	0	0	0
17.3	Excess workers' compensation	0	0	0	0	0
18.1	Products liability- occurrence	0	0	0	0	0
18.2	Products liability- claims made	0	0	0	0	0
19.1, 19.2	Private passage auto liability	954,000	0	0	0	954,000
19.3, 19.4	Commercial auto liability	996,000	23,000	0	(5,000)	1,014,000
21.	Auto physical damage	841,000	4,000	0	0	845,000
22.	Aircraft (all perils)	0	0	0	0	0
23.	Fidelity	41,000	22,000	(10,000)	0	53,000
24.	Surety	0	0	0	0	0
26.	Burglary and theft	0	0	0	0	0
27.	Boiler and machinery	0	0	0	0	0
28.	Credit	0	0	0	0	0
29.	International	0	0	0	0	0
30.	Warranty	0	0	0	0	0
31.	Reinsurance- nonproportional assumed property	0	0	0	0	0
32.	Reinsurance- nonproportional assumed liability	0	0	0	0	0
33.	Reinsurance - nonproportional assumed financial lines	0	0	0	0	0
34.	Aggregate write-ins for other lines of business	0	0	0	0	0
35.	TOTALS	11,609,000	287,000	(61,000)	(144,000)	11,691,000
36.	Accrued retrospective premiums based on experience					144,000
37.	Earned but unbilled premiums					60,000
38.	Balance (Sum of Lines 35 through 37)					11,895,000

DETAILS OF WRITE-INS

3401.		0	0	0	0	0
3402.		0	0	0	0	0
3403.		0	0	0	0	0
3498.	Summary of remaining write-ins for Line 34 from overflow page	0	0	0	0	0
3499.	Totals (Lines 3401 through 3403 plus 3498) (Line 34 above)	0	0	0	0	0

(a) State here basis of computation used in each case: Daily pro rata; pools and associations as submitted

UNDERWRITING AND INVESTMENT EXHIBIT

PART 1B - PREMIUMS WRITTEN

	Line of Business	1 Direct Business (a)	Reinsurance Assumed 2 From Affiliates	 3 From Non-Affiliates	Reinsurance Ceded 4 To Affiliates	 5 To Non-Affiliates	6 Net Premiums Written Cols. 1 + 2 + 3 - 4 - 5
1.	Fire	3,254,000	0	0	0	770,000	2,484,000
2.	Allied Lines	0	0	0	0	0	0
3.	Farmowners multiple peril	0	0	0	0	0	0
4.	Homeowners multiple peril	4,646,000	0	0	0	91,000	4,555,000
5.	Commercial multiple peril	5,003,000	0	0	0	326,000	4,677,000
6.	Mortgage guaranty	0	0	0	0	0	0
8.	Ocean Marine	0	0	0	0	0	0
9.	Inland Marine	0	0	0	0	0	0
10.	Financial guaranty	0	0	0	0	0	0
11.1	Medical professionial liability - occurrence	0	0	0	0	0	0
11.2	Medical professionial liability - claims made	0	0	0	0	0	0
12.	Earthquake	0	0	0	0	0	0
13.	Group accident and health	0	0	0	0	0	0
14.	Credit accident and health	0	0	0	0	0	0
15.	Other accident and health	0	0	0	0	0	0
16.	Worker's Compensation	4,394,000	0	0	0	372,000	4,022,000
17.1	Other liability - occurrence	3,749,000	0	0	0	247,000	3,502,000
17.2	Other liability - claim made	0	0	0	0	0	0
17.3	Excess workers' compensation	0	0	0	0	0	0
18.1	Products liability- occurrence	0	0	0	0	0	0
18.2	Products liability- claims made	0	0	0	0	0	0
19.1, 19.2	Private passage auto liability	2,804,000	0	0	0	0	2,804,000
19.3, 19.4	Commercial auto liability	2,334,000	0	0	0	84,000	2,250,000
21.	Auto physical damage	2,312,000	0	0	0	0	2,312,000
22.	Aircraft (all perils)	0	0	0	0	0	0
23.	Fidelity	138,000	0	0	0	(8,000)	146,000
24.	Surety	0	0	0	0	0	0
26.	Burglary and theft	0	0	0	0	0	0
27.	Boiler and machinery	0	0	0	0	0	0
28.	Credit	0	0	0	0	0	0
29.	International	0	0	0	0	0	0
30.	Warranty	0	0	0	0	0	0
31.	Reinsurance- nonproportional assumed property	0	0	0	0	0	0
32.	Reinsurance- nonproportional assumed liability	0	0	0	0	0	0
33.	Reinsurance - nonproportional assumed financial lines	0	0	0	0	0	0
34.	Aggregate write-ins for other lines of business	0	0	0	0	0	0
35.	TOTALS	28,634,000	0	0	0	1,882,000	26,752,000

DETAILS OF WRITE-INS

3401.		0	0	0	0	0	0
3402.		0	0	0	0	0	0
3403.		0	0	0	0	0	0
3498.	Summary of remaining write-ins for line 34 from overflow page	0	0	0	0	0	0
3499.	Totals (Lines 3401 through 3403 plus 3498) (Line 34 above)	0	0	0	0	0	0

UNDERWRITING AND INVESTMENT EXHIBIT

PART 2 LOSSES PAID AND INCURRED

	Line of Business	Losses Paid Less Salvage 1 Direct Business	2 Reinsurance Assumed	3 Reinsurance Recovered	4 Net Payments (Cols. 1 + 2 - 3)	5 Net Losses Unpaid Current Year (Part 2A, Col. 8)	6 Net Losses Unpaid Prior Year	7 Losses Incurred Current Year (Col 4 + 5 - 6)	8 Percentage of Losses Incurred (Col 7, Part 2) to Premiums Earned (Col 4, Part 1)
1.	Fire	1,560,000	0	158,000	1,402,000	1,402,000	1,250,000	1,554,000	62
2.	Allied Lines	0	0	0	0	0	0	0	0
3.	Farmowners multiple peril	0	0	0	0	0	0	0	0
4.	Homeowners multiple peril	3,645,000	0	6,000	3,639,000	1,311,000	1,161,000	3,789,000	85
5.	Commercial multiple peril	2,594,000	0	242,000	2,352,000	3,311,000	3,539,000	2,124,000	45
6.	Mortgage guaranty	0	0	0	0	0	0	0	0
8.	Ocean Marine	0	0	0	0	0	0	0	0
9.	Inland Marine	0	0	0	0	0	0	0	0
10.	Financial guaranty	0	0	0	0	0	0	0	0
11.1	Medical professionial liability - occurrence	0	0	0	0	0	0	0	0
11.2	Medical professionial liability - claims made	0	0	0	0	0	0	0	0
12.	Earthquake	0	0	0	0	0	0	0	0
13.	Group accident and health	0	0	0	0	0	0	0	0
14.	Credit accident and health	0	0	0	0	0	0	0	0
15.	Other accident and health	0	0	0	0	0	0	0	0
16.	Worker's Compensation	1,745,000	0	142,000	1,603,000	13,833,000	15,118,000	318,000	8
17.1	Other liability - occurrence	3,565,000	0	1,136,000	2,429,000	16,050,000	14,369,000	4,110,000	116
17.2	Other liability - claim made	0	0	0	0	0	0	0	0
17.3	Excess workers' compensation	0	0	0	0	0	0	0	0
18.1	Products liability- occurrence	0	0	0	0	0	0	0	0
18.2	Products liability- claims made	0	0	0	0	0	0	0	0
19.1, 19.2	Private passage auto liability	1,696,000	0	27,000	1,669,000	2,083,000	1,961,000	1,791,000	66
19.3, 19.4	Commercial auto liability	1,328,000	0	103,000	1,225,000	2,974,000	2,767,000	1,432,000	64
21.	Auto physical damage	1,512,000	0	3,000	1,509,000	214,000	195,000	1,528,000	67
22.	Aircraft (all perils)	0	0	0	0	0	0	0	0
23.	Fidelity	167,000	0	49,000	118,000	716,000	573,000	261,000	185
24.	Surety	0	0	0	0	0	0	0	0
26.	Burglary and theft	0	0	0	0	0	0	0	0
27.	Boiler and machinery	0	0	0	0	0	0	0	0
28.	Credit	0	0	0	0	0	0	0	0
29.	International	0	0	0	0	0	0	0	0
30.	Warranty	0	0	0	0	0	0	0	0
31.	Reinsurance- nonproportional assumed property	XXX	0	0	0	0	0	0	0
32.	Reinsurance- nonproportional assumed liability	XXX	0	0	0	0	0	0	0
33.	Reinsurance - nonproportional assumed financial lines	XXX	0	0	0	0	0	0	0
34.	Aggregate write-ins for other lines of business	0	0	0	0	0	0	0	0
35.	TOTALS	17,812,000	0	1,866,000	15,946,000	41,894,000	40,933,000	16,907,000	64

DETAILS OF WRITE-INS

3401.		0	0	0	0	0	0	0	0
3402.		0	0	0	0	0	0	0	0
3403.		0	0	0	0	0	0	0	0
3498.	Summary of remaining write-ins for line 34 from overflow page	0	0	0	0	0	0	0	0
3499.	Totals	0	0	0	0	0	0	0	0

UNDERWRITING AND INVESTMENT EXHIBIT

PART 2A - UNPAID LOSSES AND LOSS ADJUSTMENT EXPENSES

		Reported Losses				Incurred But Not Reported			8	9
		1 Direct Business	2 Reinsurance Assumed	3 Deduct Reinsurance Recoverable from Authorized and Unauthorized Companies	4 Net Losses Excluding Incurred but not Reported (Cols 1 + 2 - 3)	5 Direct	6 Reinsurance Assumed	7 Reinsurance Ceded	Net Losses Unpaid (Col 4 + 5 + 6 - 7)	Net Unpaid Loss Adjustment Expenses
1.	Fire	1,105,000	0	140,000	965,000	522,000	0	85,000	1,402,000	222,000
2.	Allied Lines	0	0	0	0	0	0	0	0	0
3.	Farmowners multiple peril	0	0	0	0	0	0	0	0	0
4.	Homeowners multiple peril	592,000	0	3,000	589,000	734,000	0	12,000	1,311,000	144,000
5.	Commercial multiple peril	2,323,000	0	360,000	1,963,000	1,498,000	0	150,000	3,311,000	1,471,000
6.	Mortgage guaranty	0	0	0	0	0	0	0	0	0
8.	Ocean Marine	0	0	0	0	0	0	0	0	0
9.	Inland Marine	0	0	0	0	0	0	0	0	0
10.	Financial guaranty	0	0	0	0	0	0	0	0	0
11.1	Medical professionial liability - occurrence	0	0	0	0	0	0	0	0	0
11.2	Medical professionial liability - claims made	0	0	0	0	0	0	0	0	0
12.	Earthquake	0	0	0	0	0	0	0	0	0
13.	Group accident and health	0	0	0	0	0	0	0	0	0
14.	Credit accident and health	0	0	0	0	0	0	0	0	0
15.	Other accident and health	0	0	0	0	0	0	0	0	0
16.	Worker's Compensation	9,343,000	0	1,604,000	7,739,000	6,652,000	0	558,000	13,833,000	2,113,000
17.1	Other liability - occurrence	6,868,000	0	2,122,000	4,746,000	14,189,000	0	2,885,000	16,050,000	4,641,000
17.2	Other liability - claim made	0	0	0	0	0	0	0	0	0
17.3	Excess workers' compensation	0	0	0	0	0	0	0	0	0
18.1	Products liability- occurrence	0	0	0	0	0	0	0	0	0
18.2	Products liability- claims made	0	0	0	0	0	0	0	0	0
19.1, 19.2	Private passage auto liability	2,116,000	0	633,000	1,483,000	628,000	0	28,000	2,083,000	399,000
19.3, 19.4	Commercial auto liability	2,020,000	0	285,000	1,735,000	1,389,000	0	150,000	2,974,000	476,000
21.	Auto physical damage	112,000	0	5,000	107,000	137,000	0	30,000	214,000	96,000
22.	Aircraft (all perils)	0	0	0	0	0	0	0	0	0
23.	Fidelity	466,000	0	191,000	275,000	581,000	0	140,000	716,000	101,000
24.	Surety	0	0	0	0	0	0	0	0	0
26.	Burglary and theft	0	0	0	0	0	0	0	0	0
27.	Boiler and machinery	0	0	0	0	0	0	0	0	0
28.	Credit	0	0	0	0	0	0	0	0	0
29.	International	0	0	0	0	0	0	0	0	0
30.	Warranty	0	0	0	0	0	0	0	0	0
31.	Reinsurance- nonproportional assumed property	XXX	0	0	0	XXX	0	0	0	0
32.	Reinsurance- nonproportional assumed liability	XXX	0	0	0	XXX	0	0	0	0
33.	Reinsurance - nonproportional assumed financial lines	XXX	0	0	0	XXX	0	0	0	0
34.	Aggregate write-ins for other lines of business	0	0	0	0	0	0	0	0	0
35.	TOTALS	24,945,000	0	5,343,000	19,602,000	26,330,000	0	4,038,000	41,894,000	9,663,000

DETAILS OF WRITE-INS

3401.		0	0	0	0	0	0	0	0	0
3402.		0	0	0	0	0	0	0	0	0
3403.		0	0	0	0	0	0	0	0	0
3498.	Summary of remaining write-ins for line 34 from overflow page	0	0	0	0	0	0	0	0	0
3499.	Totals (Lines 3401 through 3403 plus 3498) (Line 34 above)	0	0	0	0	0	0	0	0	0

UNDERWRITING AND INVESTMENT EXHIBIT

PART 3 - EXPENSES

	1 Loss Adjustment Expenses	2 Other Underwriting Expenses	3 Investment Expenses	4 Total
1. Claims Adjustment Services:				
1.1 Direct	1,881,000	0	0	1,881,000
1.2 Reinsurance Assumed	0	0	0	0
1.3 Reinsurance Ceded	210,000	0	0	210,000
1.4 Net claims adjusment services (1.1 + 1.2 - 1.3)	1,671,000	0	0	1,671,000
2. Commission and Brokerage:				
2.1 Direct, excluding contingent	0	4,759,000	0	4,759,000
2.2 Reinsurance assumed, excluding contingent	0	0	0	0
2.3 Reinsurance ceded, excluding contingent	0	816,000	0	816,000
2.4 Contingent - direct	0	121,000	0	121,000
2.5 Contingent - reinsurance assumed	0		0	0
2.6 Contingent - reinsurance ceded	0	9,000	0	9,000
2.7 Policy and membership fees	0	0	0	0
2.8 Net commission and brokerage (2.1 + 2.2 - 2.3 + 2.4 + 2.5 - 2.6 + 2.7)	0	4,055,000	0	4,055,000
3. Allowances to managers and agents	0	4,000	0	4,000
4. Advertising	0	208,000	0	208,000
5. Boards, bureaus and associations	7,000	106,000	0	113,000
6. Surveys and underwriting reports	0	99,000	0	99,000
7. Audit of assureds' records	0	0	0	0
8. Salary and related items:				
8.1 Salaries	949,000	1,845,000	32,000	2,826,000
8.2 Payroll taxes	69,000	115,000	0	184,000
9. Employee relations and welfare	182,000	293,000	3,000	478,000
10. Insurance	117,000	23,000	0	140,000
11. Directors' fees	0	0	0	0
12. Travel and travel items	64,000	95,000	0	159,000
13. Rent and rent items	62,000	133,000	1,000	196,000
14. Equipment	11,000	42,000	3,000	56,000
15. Cost or depreciation of EDP equipment and software	30,000	330,000	0	360,000
16. Printing and stationery	5,000	19,000	0	24,000
17. Postage, telephone and telegraph, exchange and express	19,000	112,000	0	131,000
18. Legal and auditing	44,000	14,000	2,000	60,000
19. Total (Lines 3 to 18)	1,559,000	3,438,000	41,000	5,038,000
20. Taxes, Licenses and Fees:				
20.1 State and local insurance taxes deducting guaranty association credits of $ 1,103	0	791,000	0	791,000
20.2 Insurance department licenses and fees	0	53,000	0	53,000
20.3 Gross guaranty association assessments	0	(2,000)	0	(2,000)
20.4 All other (excluding federal and foreign income and real estate)	0	18,000	0	18,000
20.5 Total taxes, licenses and fees (20.1 + 20.2 + 20.3 + 20.4)	0	860,000	0	860,000
21. Real estate expenses	0	0	332,000	332,000
22. Real estate taxes	0	0	14,000	14,000
23. Reimbursement by uninsured plans	0	0	0	0
24. Aggregate write-ins for miscellaneous expenses	25,000	130,000	6,000	161,000
25. Total expenses incurred	3,255,000	8,483,000	393,000	12,131,000
26. Less unpaid expenses - current year	9,663,000	1,918,000	14,000	11,595,000
27. Add unpaid expenses - prior year	9,664,000	1,886,000	17,000	11,567,000
28. Amounts receivable relating to uninsured plans, prior year	0	0	0	0
29. Amounts receivable relating to uninsured plans, current year	0	0	0	0
30. TOTAL EXPENSES PAID (Lines 25 - 26 + 27 - 28 + 29)	3,256,000	8,451,000	396,000	12,103,000

EXHIBIT OF NET INVESTMENT INCOME

		1 Collected During Year	2 Earned During Year
1.	U. S. Government bonds	(a) 248,000	249,000
1.1	Bonds exempt from U.S. tax	(a) 1,275,000	1,280,000
1.2	Other Bonds (unaffiliated)	(a) 1,051,000	1,026,000
1.3	Bonds of Affiliates	(a) 0	0
2.1	Preferred stocks (unaffliliated)	(b) 2,000	2,000
2.11	Preferred stocks of affiliates	(b) 0	0
2.2	Common stocks (unaffiliated)	951,000	951,000
2.21	Common stocks of affiliates	0	0
3.	Mortgage loans	(c) 13,000	13,000
4.	Real Estate	(d) 696,000	696,000
5.	Contract Loans	0	0
6.	Cash, cash equivalents and short-term investments	(e) 6,000	6,000
7.	Derivative Instruments	(f) 0	0
8.	Other Invested Assets	649,000	645,000
9.	Aggregate write-ins for invested assets	1,000	1,000
10.	Total gross invested income	4,879,000	4,869,000
11.	Investment expenses		(g) 399,000
12.	Investment Taxes, licenses and fees, excluding federal income tax		(g) 0
13.	Interest Expense		(h) 0
14.	Depreciation on real estate and other invested assets		(i) 179,000
15.	Aggregate write-ins for deductions from investment income		1,000
16.	Total deductions (Lines 11 through 15)		579,000
17.	Net Investment Income (Line 10 minus Line 16)		4,290,000

DETAILS OF WRITE-INS

0901.	Property and wind plans	1,000	1,000
0902		0	0
0903		0	0
0998	Summary of remaining write-ins for Line 9 from overflow page	0	0
0999	Totals (Lines 0901 thru 0903 plus 0988) (Line 9 above)	1,000	1,000
1501.	Management Fees		1,000
1502.			0
1503.			0
1598.	Summary of remaining write-ins for Line 15 from overflow page		0
1599.	Totals (Line 1501 thur 1503) (Line 15 above)		1,000

(a) Includes $..... 36,000 accrual of discount less $... 288,000 amoritzation of premium and less $... 26,000 paid for accrued interest on purchases.
(b) Includes $..... 0 accrual of discount less $... 0 amoritzation of premium and less $... 0 paid for accrued dividend on purchases.
(c) Includes $..... 0 accrual of discount less $... 0 amoritzation of premium and less $... 0 paid for accrued interest on purchases.
(d) Includes $.....81,000 for company's occupancy of its own buildings, and excludes $... 0 interest on encumrances.
(e) Includes $..... 200 accrual of discount less $... 0 amoritzation of premium and less $... 0 paid for accrued interest on purchases.
(f) Includes $..... 0 accrual of discount less $... 0 amoritzation of premium.
(g) Includes $..... 0 investment expenses and $... 0 investment taxes, licenses and fees, excluding federal income taxes attributable to Segregated and Separate Accounts.
(h) Includes $..... 0 interest on surplus notes and $... 0 interest on capital notes.
(i) Includes $..... 177,000 depreciation on real estate and $...0 depreciation on other invested assets.

EXHIBIT OF CAPITAL GAINS (LOSSES)

		1 Realized Gain (Loss) on Sales or Maturity	2 Other Realized Adjustments	3 Total Realized Capital Gain (Loss) (Columns 1 + 2)	4 Change in Unrealized Captial Gain (Loss)	5 Change in Unrealized Foreign Exchange Capital Gain (Loss)
1.	U. S. government bonds	0	0	0	0	0
1.1	Bonds exempt from U.S. Tax	12,000	(2,000)	10,000	2,000	0
1.2	Other bonds (unaffiliated)	81,000	42,000	123,000	22,000	(70,000)
1.3	Bonds of affiliates	0	0	0	0	0
2.1	Preferred stocks (unaffiliated)	0	0	0	(1,000)	0
2.11	Preferred stocks of affiliates	0	0	0	0	0
2.2	Common stocks (unaffiliated)	167,000	(14,000)	153,000	54,000	0
2.21	Common stocks of affiliates	0	0	0	(95,000)	0
3.	Mortgage loans	0	(9,000)	(9,000)	0	0
4.	Real Estate	0	0	0	0	0
.5	Contract Loans	0	0	0	0	0
6.	Cash, cash equivalents and short term investments	0	9,000	9,000	0	(2,000)
7.	Derivative instruments	(137,000)	0	(137,000)	(76,000)	0
8.	Othe invested assets	19,000	(67,000)	(48,000)	145,000	(6,000)
9.	Aggregate write-in for capital gains (losses0	0	13,000	13,000	38,000	(45,000)
10.	Total capital gains (losses)	142,000	(28,000)	114,000	89,000	(123,000)

Selected NOTES TO FINANCIAL STATEMENTS

1. Summary of Significant Accounting Policies

A. Accounting Policies

Fictitious Insurance Company prepares its statutory financial statements in conformity with accounting practices prescribed or permitted by the state of Florida. The state of Florida requires that insurance companies domiciled in Florida prepare their statutory basis financial statements in accordance with the National Association of Insurance Commissioners (NAIC) Accounting Practices and Procedures Manual, subject to any deviations prescribed or permitted by the Florida Insurance Commissioner. The impact of any permitted accounting practices on policyholder surplus of the Company is not material.

22. Events Subsequent

The company had no material subsequent events through February 15, 2012.

23. Reinsurance

A. Unsecured Reinsurance Recoverable

The company had one reinsurer whose aggregate recoverable for ceded losses, loss adjustment expenses and unearned premiums recoverable as of December 31, 2011 exceeded 3% of the Company's Surplus. The company was Good Reinsurer, F.E.I.N. xxxxxx. Its net recoverable was $4,189.000 or 14% of Surplus. Good Reinsurer has always been current in its payments and is an A+ rated company by A.M. Best and is financially sound.

B. Reinsurance Recoverable in Dispute

The company has a few recoverable in dispute, but they are not material.

C. Reinsurance Assumed and Ceded

(1) The following table sets forth the maximum return premium and commission equity due the reinsurers or the Company if all of the Company's ceded reinsurance was canceled as of December 31, 2011:

	Ceded Reinsurance		Net Reinsurance	
	Unearned Premium Reserve	Commission Equity	Unearned Premium Reserve	Commission Equity
Total	$ 920,000	$ 124,000	$ 11,691,000	$ 1,595,000
Direct Unearned Premium Reserve: $12,610,000				

(2) Accruals for contingent, sliding scale adjustment and other profit sharing commissions, net of reinsurance assumed and ceded, amounted to $188,000 at December 31, 2011:

Direct Business	$200,000
Reinsurance Assumed	-
Reinsurance Ceded	12,000
Net	$188,000

D. Uncollectible Reinsurance

Not applicable.

E. Commutation of Ceded Reinsurance

Not applicable.

F. Retroactive Reinsurance

	Assumed	Ceded
a. Reserves Transferred		
(1) Initial Reserves		$ 676,613
(2) Adjustments - Prior Years		261,792
(3) Adjustments - Current Year		(5,791)
(4) Current Total		$ 932,614
b. Consideration Paid or Received		
(1) Initial Consideration		$ 602,314
(2) Adjustments - Prior Years		72,120
(3) Adjustments - Current Year		-
(4) Current Total		$ 674,434
c. Paid Losses Reimbursed or Recovered		
(1) Prior Years		$ 755,052
(2) Current Year		25,485
(3) Current Total		$ 780,537
d. Special Surplus from Retroactive Reinsurance		
(1) Initial Surplus Gain or Loss		$ 74,299
(2) Adjustments - Prior Years		189,673
(3) Adjustments - Current Year		(5,791)
(4) Current Year Restricted Surplus		135,715
(5) Cumulative Total Transferred to Unassigned Surplus		$ 122,270

e. All cedents and reinsurers included in the above transactions:

Company	Assumed	Ceded
Good Reinsurer		$ 532,613
Foreign Authorized		$ 400,000

f. Paid loss/LAE recoverable

Company	Paid Loss & ALAE Recoverable	Over 90 days overdue	Collateral Held
Good Reinsurer	$ 302,000	$ -	$ -
Foreign Authorized	$ 34,000	$ -	$ -

Selected NOTES TO FINANCIAL STATEMENTS

25. Changes in Incurred Losses and Loss Adjustment Expenses

During the period from January 1, 2011 to December 31, 2011, the prior year-end total loss and loss adjustment expense reserves for The Company developed favorably by $875,000. This development was driven mainly by better than expected loss and DCC development in the other liability, workers compensation and homeowners segments. The deterioration in the commercial auto liability and commercial multi-peril segments offset some of this positive development.

Homeowners showed positive development in the 2010 accident year which was driven by better than expected loss development primarily related to catastrophe losses. The deterioration in Commercial Auto was driven by worse than expected severity for 2008 through 2010. Asbestos and Environmental reserves developed unfavorably and drove the large development for prior years.

26. Intercompany Pooling

The Company does not participate in any intercompany pooling.

27. Structured Settlements

The Company has purchased annuities from XYZ Life Insurance Company, under which the claimant is the payee and the Company is the owner of the annuity contract, to fund structured settlements. The statement value of these annuities is $ 4,304,000. The annuities are treated as closed claims, but in the event that XYZ Life Insurance Company fails to make the required annuity payments, the Company would be required to make such payments as not covered by state guaranty associations.

30. Premium Deficiency Reserves

The Company has no premium deficiency reserves and investment income was considered in determining premium deficiency reserves.

31. High Deductibles

The Company does not issue any policies with high deductible plans.

32. Discounting of Liabilities for Unpaid Losses or Unpaid Loss Adjustment Expenses

For Workers Compensation, the Company discounts its reserves for unpaid losses on a tabular basis with a discount rate of 3.5% based on United States Life Tables. Reserves for other liability structured settlements are discounted at a rate of 4.5% and reflect the Individual Annuity Mortality table.
The amount of tabular discount reserves for Workers Compensation is $1,159,000 of which $495,000 is the discount on case reserves and $664,000 is the discount on IBNR.
The amount of tabular discount for Other Liability is $206,000 of which $21,000 is the discount on case reserves, $15,000 is the discount on IBNR and $170,000 is the discount on structure settlements. The total amount of discount for Workers Compensation and Other Liability is $1,365,000.

33. Asbestos/Environmental Reserves

A. Does the Company have on the books or has it ever written an insured for which you have identified potential for the existence of a liability due to asbestos losses?
Yes (X) No ( )

Exposures for asbestos and environmental losses arise from liability coverage written many years ago. The methods of determining estimates for reported and unreported losses and establishing resulting reserves and related reinsurance recoverables are periodically reviewed and updated. Conventional actuarial methods are not utilized to establish these reserves. Reserve methods used include an analysis of exposure and claim payment patterns and recent settlements, judicial

Due to the uncertainties of legal issues such as coverage, potential liability etc. for these asbestos and environmental related claims the Company believes that these claims could result in a liability that materially differs from current reserves.

The following tables summarize the activity for these asbestos and environmental claims for the past five years.

1. Direct Basis- Asbestos:		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ 6,268,000	$ 5,717,000	$ 4,439,000	$ 4,166,000	$ 3,957,000
b	Incurred Losses and LAE:	-	49,000	249,000	353,000	262,000
c.	Calendar Year Payments for Losses and LAE:	551,000	1,328,000	522,000	561,000	478,000
d.	Ending Reserves	$ 5,717,000	$ 4,438,000	$ 4,166,000	$ 3,958,000	$ 3,741,000

2. Assumed Reinsurance Basis - Asbestos		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ -	$ -	$ -	$ -	$ -
b	Incurred Losses and LAE:	-	-	-	-	-
c.	Calendar Year Payments for Losses and LAE:	-	-	-	-	-
d.	Ending Reserves	$ -	$ -	$ -	$ -	$ -

3. Net of Ceded Reinsurance Basis - Asbestos		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ 5,450,000	$ 5,023,000	$ 3,920,000	$ 3,709,000	$ 3,426,000
b	Incurred Losses and LAE:	-	49,000	249,000	188,000	236,000
c.	Calendar Year Payments for Losses and LAE:	427,000	1,153,000	459,000	471,000	382,000
d.	Ending Reserves	$ 5,023,000	$ 3,919,000	$ 3,710,000	$ 3,426,000	$ 3,280,000

B. Ending Loss and LAE Reserves for unreported claims included in Part A above

a.	Direct Basis	$ 3,116,000
b.	Assumed Reinsurance Basis:	-
c.	Net of Ceded Reinsurance Basis	$ 2,782,000

C. Ending LAE reserves for reported and unreported claims included in Part A above:

a.	Direct Basis	$ 962,000
b.	Assumed Reinsurance Basis:	-
c.	Net of Ceded Reinsurance Basis	$ 907,000

Selected NOTES TO FINANCIAL STATEMENTS

D. Does the Company have on the books or has it ever written an insured for which you have identified a potential for the existence of a liability due to environmental losses? Yes (X) No ( ).

Exposure for environmental losses arises from liability coverage written many years ago. The exposures include bodily injury and property damage losses.

1. Direct Basis- Environmental:		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ 562,000	$ 659,000	$ 565,000	$ 551,000	$ 503,000
b	Incurred Losses and LAE:	249,000	108,000	114,000	60,000	108,000
c.	Calendar Year Payments for Losses and LAE:	152,000	202,000	128,000	108,000	118,000
d.	Ending Reserves	$ 659,000	$ 565,000	$ 551,000	$ 503,000	$ 493,000

2. Assumed Reinsurance Basis - Environmental		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ -	$ -	$ -	$ -	$ -
b	Incurred Losses and LAE:	-	-	-	-	-
c.	Calendar Year Payments for Losses and LAE:	-	-	-	-	-
d.	Ending Reserves	$ -	$ -	$ -	$ -	$ -

3. Net of Ceded Reinsurance Basis - Environmental		2007	2008	2009	2010	2011
a.	Beginning Reserves	$ 558,000	$ 650,000	$ 556,000	$ 528,000	$ 471,000
b	Incurred Losses and LAE:	248,000	108,000	94,000	47,000	102,000
c.	Calendar Year Payments for Losses and LAE:	156,000	202,000	122,000	104,000	114,000
d.	Ending Reserves	$ 650,000	$ 556,000	$ 528,000	$ 471,000	$ 459,000

E. Ending Loss and LAE Reserves for unreported claims included in Part D above

a.	Direct Basis	$ 428,000
b.	Assumed Reinsurance Basis:	-
c.	Net of Ceded Reinsurance Basis	$ 425,000

F. Ending LAE reserves for reported and unreported claims included in Part D above:

a.	Direct Basis	$ 112,000
b.	Assumed Reinsurance Basis:	-
c.	Net of Ceded Reinsurance Basis	$ 110,000

FIVE YEAR HISTORICAL DATA

		1 2011	2 2010	3 2009	4 2008	5 2007
	Gross Premiums Written (Page 8, Part 1B, Cols 1, 2 & 3)					
1.	Liability lines (Lines 11.1,11.2,16,17.1,17.2,17.3,18.1,18.2,19.1,19.2,19.3, & 19.4)	13,281,000	13,843,000	15,075,000	16,422,000	16,815,000
2.	Property lines (Lines 1, 2, 9, 12, 21, & 26)	5,566,000	4,990,000	5,436,000	5,925,000	6,155,000
3.	Property and liability combined lines (Lines 3, 4, 5, 8, 22 & 27)	9,649,000	8,936,000	8,651,000	8,544,000	8,355,000
4.	All other lines (Lines 6, 10, 13, 14, 15, 23, 24, 28, 29, 30 & 34)	138,000	316,000	357,000	347,000	345,000
5.	Nonproportional reinsurance lines (Lines 31, 32 & 33)	0	0	0	0	0
6.	Total (Line 35)	28,634,000	28,085,000	29,519,000	31,238,000	31,670,000
	Net Premiums Written (Page 8, Part 1B, Col 6)					
7.	Liability lines (Lines 11.1,11.2,16,17.1,17.2,17.3,18.1,18.2,19.1,19.2,19.3, & 19.4)	12,578,000	12,020,000	11,964,000	12,031,000	11,944,000
8.	Property lines (Lines 1, 2, 9, 12, 21, & 26)	4,796,000	4,881,000	4,935,000	5,120,000	5,258,000
9.	Property and liability combined lines (Lines 3, 4, 5, 8, 22 & 27)	9,232,000	8,880,000	8,470,000	8,290,000	8,077,000
10.	All other lines (Lines 6, 10, 13, 14, 15, 23, 24, 28, 29, 30 & 34)	146,000	155,000	152,000	142,000	84,000
11.	Nonproportional reinsurance lines (Lines 31, 32 & 33)	0	0	0	0	0
12.	Total (Line 35)	26,752,000	25,936,000	25,521,000	25,583,000	25,363,000
	Statement of Income (Page 4)					
13.	Net underwriting gain (loss) (Line 8)	(2,142,000)	1,487,000	2,544,000	1,883,000	2,773,000
14.	Net investment gain (loss) (Line 11)	4,305,000	4,414,000	2,850,000	3,993,000	4,747,000
15.	Total other income (Line 15)	32,000	48,000	38,000	143,000	47,000
16.	Dividends to policyholders (Line 17)	46,000	32,000	23,000	29,000	31,000
17.	Federal and foreign income taxes incurred (Line 19)	(30,000)	963,000	1,489,000	1,378,000	1,304,000
18.	Net income (Line 20)	2,179,000	4,954,000	3,920,000	4,612,000	6,232,000
	Balance Sheet Lines (Pages 2 and 3)					
19.	Total admitted assets excluding protected cell business (Page 2, Line 26, Col. 3)	100,000,000	99,686,000	104,389,000	104,063,000	107,754,000
20.	Premiums and considerations (Page 2, Col. 3):					
	20.1 In course of collection (Line 15.1)	2,626,000	2,866,000	2,069,000	1,335,000	1,575,000
	20.2 Deferred and not yet due (Line 15.2)	5,114,000	4,927,000	4,811,000	5,229,000	5,344,000
	20.3 Accrued retrospective premiums (Line 15.3)	250,000	263,000	650,000	433,000	305,000
21.	Total liabilities excluding protected cell business (Page 3, line 26)	68,976,000	68,068,000	68,595,000	69,490,000	70,387,000
22.	Losses (Page 3, Line 1)	41,894,000	40,933,000	41,642,000	42,689,000	43,743,000
23.	Loss adjustment expenses (Page 3, Line 3)	9,663,000	9,664,000	9,955,000	9,919,000	9,807,000
24.	Unearned premiums (Page 3, Line 9)	11,895,000	11,557,000	11,207,000	11,397,000	11,403,000
25.	Capital paid up (Page 3, Lines 30 & 31)	108,000	108,000	108,000	108,000	108,000
26.	Surplus as regards policyholders (Page 3, Line 37)	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
	Cash Flow (Page 5)					
27.	Net cash from operations (Line 11)	3,411,000	5,017,000	3,942,000	3,906,000	5,298,000
	Risk Based Capital Analysis					
28.	Total adjusted capital	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
29.	Authorized control level risk-based capital	5,552,000	6,097,300	5,854,000	5,685,000	6,517,000
	Percentage Distribution of Cash, Cash Equivalents and Invested Assets					
	(Page 2, Col3) (Item divided by Page 2, Line 12, Col. 3) x 100.0					
30.	Bonds (Line 1)	68	66	68	70	72
31.	Stocks (Lines 2.1 & 2.2)	22	22	21	18	18
32.	Mortgage loans on real estate (Lines 3.1 & 3.2)	0	0	0	0	0
33.	Real Estate (Lines 4.1, 4.2 & 4.3)	4	4	4	4	4
34.	Cash, cash equivalents and short term investments (Line 5)	2	2	2	4	2
35.	Contract loans (Line 6)	0	0	0	0	0
36.	Derivatives (Line 7)	0	0	0	0	0
37.	Other invested assets (Line 8)	4	5	4	4	4
38.	Receivable for securities (Line 9)	0	0	0	0	0
39.	Securities lending reinvested collateral assets (Line 10)	0	0	0	0	0
40.	Aggregate write-ins for invested assets (Line 11)	(0)	(0)	0	0	0
41.	Cash, cash equivalents and invested assets (Line 12)	100	100	100	100	100
	Investments in Parent, Subsidiaries and Affiliates					
42.	Affiliated bonds (Sch. D, Summary, Line 12, Col. 1)	0	0	0	0	0
43.	Affiliated preferred stocks (Sch. D, Summary, Line 18, Col. 1)	0	0	0	0	0
44.	Affiliated common stocks (Sch. D, Summary, Line 24, Col. 1)	0	0	0	0	0
45.	Affiliated short-term investments (Schedule DA, Verification, Col 5, Line 10)	0	0	0	0	0
46.	Affiliated mortgage loans on real estate	0	0	0	0	0
47.	All other affiliated	0	0	0	0	0
48.	Total of above lines 42 to 47	0	0	0	0	0
49.	Percentage of investments in parent, subsidiaries and affiliates to surplus as regard policyholders (Line 48 above divided by Page 3, Col. 1, Line 37 x 100.0)	0	0	0	0	0

FIVE YEAR HISTORICAL DATA

		1 2011	2 2010	3 2009	4 2008	5 2007
	Capital and Surplus Accounts (Page 4)					
50.	Net unrealized capital gains (losses) (Line 24)	81,000	119,000	3,250,000	373,000	1,743,000
51.	Dividends to stockholders (Line 35)	(2,617,000)	(10,024,000)	(7,327,000)	(5,973,000)	(7,754,000)
52.	Change in surplus as regards policyholders for the year (Line 38)	(585,000)	(4,185,000)	3,221,000	(1,995,000)	(753,000)
	Gross Losses Paid (Page 9, Part 2, Cols. 1 & 2)					
53.	Liability lines (lines 11.1,11.2,16,17.1,17.2,17.3,18.1,18.2,19.1,19.2,19.3, & 19.4)	8,335,000	8,961,000	8,829,000	9,280,000	9,610,000
54.	Property lines (lines 1, 2, 9, 12, 21, & 26)	3,072,000	2,799,000	3,077,000	3,144,000	2,835,000
55.	Property and liability combined lines (Lines 3, 4, 5, 8, 22 & 27)	6,239,000	4,456,000	3,951,000	3,906,000	3,437,000
56.	All other lines (Lines 6, 10, 13, 14, 15, 23, 24, 28, 29, 30 & 34)	167,000	161,000	173,000	327,000	905,000
57.	Nonproportional reinsurance lines (Lines 31, 32 & 33)	0	0	0	0	0
58.	Total (Line 35)	17,813,000	16,377,000	16,030,000	16,657,000	16,787,000
	Net Losses Paid (Page 9, Part 2, Col 4)					
59.	Liability lines (lines 11.1,11.2,16,17.1,17.2,17.3,18.1,18.2,19.1,19.2,19.3, & 19.4)	6,926,000	6,510,000	6,047,000	6,804,000	6,500,000
60.	Property lines (lines 1, 2, 9, 12, 21, & 26)	2,911,000	2,582,000	2,663,000	2,655,000	2,344,000
61.	Property and liability combined lines (Lines 3, 4, 5, 8, 22 & 27)	5,991,000	4,328,000	3,932,000	3,905,000	3,259,000
62.	All other lines (Lines 6, 10, 13, 14, 15, 23, 24, 28, 29, 30 & 34)	118,000	86,000	102,000	89,000	270,000
63.	Nonproportional reinsurance lines (Lines 31, 32 & 33)	0	0	0	0	0
64.	Total (Line 35)	15,946,000	13,506,000	12,744,000	13,453,000	12,373,000
	Operating Percentages					
	(Page 4) (Item divided by Page 4, Line1) x 100.0					
65.	Premiums earned (Line 1)	100.0	100.0	100.0	100.0	100.0
66.	Losses incurred (Line 2)	63.8	50.1	45.7	48.6	46.4
67.	Loss expenses incurred (Line 3)	12.3	11.8	12.4	12.8	12.2
68.	Other underwriting expenses incurred (Line 4)	32.0	32.3	32.0	31.2	30.4
69.	Net underwriting gain (loss) (Line 8)	(8.1)	5.8	9.9	7.4	10.9
	Other Percentages					
70.	Other underwriting expenses to net premiums written (Page 4, Lines 4 + 5 - 15 divided by Page 8, Part 1B, Col. 6, Line 35 x 100.0)	31.6	316.0	32.0	30.6	30.3
71.	Losses and loss expense incurred to premiums earned (Page 4, Lines 2 + 3 divided by Page 4, Line 1 x 100.0)	76.0	61.9	58.1	61.4	58.6
72.	Net premiums written to policyholders' surplus (Page 8, Part 1B, Col. 6, Line 35, divided by Page 3, Line 37, Col.1 x 100.0)	86.2	82.1	71.3	74.0	67.9
	One Year Loss Development (000 omitted)					
73.	Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2-Summary, Line 12, Col.11)	(875)	(1,354)	(1,618)	(1,935)	(918)
74.	Percent development of losses and loss expenses incurred to policyholders' surplus of prior year end (Line 73 above divided by Page 4, Line 21, Col. 1 x 100)	(2.8)	(3.8)	(5.0)	(5.6)	(2.6)
	Two Year Loss Development (000 omitted)					
75.	Development in estimated losses and loss expenses incurred 2 years before the current year and prior year (Schedule P, Part 2-Summary, Line 12, Col.12)	(2,602)	(2,906)	(3,680)	(2,544)	(1,059)
76.	Percent of development of losses and loss expenses incurred to reported policyholders' surplus of second prior year end (Line 75 above divided by Page 4, Line 21, Col. 2 x 100.0)	(7.3)	(8.9)	(10.6)	(7.3)	(3.0)

SCHEDULE F Part 1

Assumed Reinsurance as of December 31, Current Year (000 Omitted)

1	2	3	4	5	Reinsurance Recoverable on			9	10	11	12	13	14	15
					6	7	8							
Federal ID Number	NAIC Company Code	Name of Reinsurer	Domicillary Jurisdition	Assumed Premium	Paid Losses and Loss Adjustment Expense	Known Case Losses and LAE	Col. 6 + 7	Contingent Commissions Payable	Assumed Premiums Receivable	Unearned Premium	Funds Held by or Depostied With Reinsured Companies	Letters of Cred Posted	Amount of Assets Pledged or Compensating Balances to Secure Letters of Credit	Amount of Assets Pledged or Collateral Held in Trust
Affiliated - U.S. Intercompany Pooling:														
0199999		Total Authorized Affiliates U.S. Intercompany Pooling	0	0	0	0	0	0	0	0	0	0	0	0
Affiliated U.S. Non-Pool:														
0299999		Total Authorized Affiliates U.S. non-Pool	0	0	0	0	0	0	0	0	0	0	0	0
Affiliate-Other (Non- U.S.)														
0399999		Affilated- Other (Non-U.S.)	0	0	0	0	0	0	0	0	0	0	0	0
0499999		Total Affliates	0	0	0	0	0	0	0	0	0	0	0	0
Other U. S. Unaffiliated Insurance														
0599999		Total Authorized Other-US Insurers Unaffiliated	0	0	0	0	0	0	0	0	0	0	0	0
Pools and Associations - Mandatory Pools														
0699999		Pools and Associations - Mandatory Pools	0	0	0	0	0	0	0	0	0	0	0	0
Pools and Associations - Voluntary Pools														
0799999		Pools and Associations - Mandatory Pools	0	0	0	0	0	0	0	0	0	0	0	0
0899999		Total Pools and Associations	0	0	0	0	0	0	0	0	0	0	0	0
Non-US Insurers														
0999999		Other Non-US Insurers	0	0	0	0	0	0	0	0	0	0	0	0
9999999		Totals	0	0	0	0	0	0	0	0	0	0	0	0

SCHEDULE F - PART 2

Premium Portfolio Reinsurance Effected of (Canceled) during Current Year

1 Federal ID Number	2 NAIC Company Code	3 Name of Company	4 Date of Contract	5 Original Premium	6 Reinsurance Premium

NONE

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SCHEDULE F Part 3

Ceded Reinsurance as of December 31, Current Year (000 Omitted)

1	2	3	4	5	6	Reinsurance Recoverable on									Reinsurance Payable		18	19
						7	8	9	10	11	12	13	14	15	16	17		
Federal ID Number	NAIC Company Code	Name of Reinsurer	Domicillary Jurisdition	Reinsurance Contracts Ceding 75% or More of Direct Premiums Written	Reinsurance Premiums Ceded	Paid Losses	Paid LAE	Known Case Loss Reserves	Known Case LAE Reserves	IBNR Loss Reserves	IBNR LAE Reserves	Unearned Premiums	Contingent Commissions	Cols. 7 thru 14 Totals	Ceded Balances Payable	Other Amounts Due to Reinsurers	Net Amount Recoverable From Reinsurers Col. 15 - (16 + 17)	Funds Held By Company Under Reinsurance Treaties
Affiliated - U.S. Intercompany Pooling:																		
0199999	Total Authorized Affiliates U.S. Intercompany Pooling				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Affiliated U.S. Non-Pool:																		
11-111	233333...	Affillated Non-Pool			0	0	0	0	0	0	0	0	0	0	0	0	0	0
0299999	Total Authorized Affiliates U.S. non-Pool				0	0	0	0	0	0	0	0	0	0	0	0	0	0
0499999	Total Affliates				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Authorized Other U. S. Unaffiliated Insurance																		
31-123	11111.....	Good Reinsurer	AL		379	302	0	2,392	118	1,000	174	191	6	4,183	0	0	4,183	0
43-145	22222.....	Overdue Reinsurer	TX		130	10	0	237	12	376	51	59	0	745	13	0	732	0
76-345	33333.....	Slightly Overdue Reinsurer	NY		732	64	0	1,525	75	802	119	376	5	2,967	151	0	2,816	0
0599999	Total Authorized Other-US Insurers Unaffiliated				1,241	376	0	4,154	205	2,178	345	626	12	7,896	164	0	7,731	0
Authorized Pools Voluntary Pools																		
44-111	555555...	Pooling Company	NY		111	0	0	203	4	322	49	50	0	628	11	0	617	0
0799999	Total Authorized Pools				111	0	0	203	4	322	49	50	0	628	11	0	617	0
Authorized Other Non-US Insurers																		
33-1234	544445...	Foreign Authorized	GB		444	34	0	813	40	1,287	36	201	0	2,411	255	0	2,156	0
0899999	Total Authorized Other Non-US Insurers				444	34	0	813	40	1,287	36	201	0	2,411	255	0	2,156	0
0999999	Total Authorized				1,795	410	0	5,171	249	3,787	430	877	12	10,935	431	0	10,504	0
Unauthorized Affiliates																		
1399999	Total Unauthorized Affiliates				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unauthorized Other U.S. Unaffiliated Insurers																		
13-1063	333.....	Reinsurer A	NY		6	8	0	10	1	16	4	3	0	42	1	0	41	20
11-0002	444.....	Reinsurer B	KS		28	2	0	51	3	80	22	13	0	170	3	0	167	0
11-0000	555.....	Reinsurer C	CA		28	2	0	51	3	58	22	13	0	148	3	0	145	20
1499999	Total Unauthorized Other U.S. Unaffiliated Insurers				61	13	0	112	6	155	48	28	0	360	6	0	354	40
Unauthorized Other Non-U.S. Unaffiliated Insurers																		
12-00001	66666.....	Reinsurer D	GB		6	1	0	10	1	16	4	3	0	35	1	0	34	30
12-00002	77777.....	Reinsurer E	GB		20	2	0	51	3	80	22	13	0	170	2	0	168	100
1799999	Total Unauthorized Other Non-U.S. Unaffiliated Insurers				25	3	0	61	3	96	26	15	0	205	3	0	202	130
1899999	Total Unauthorized				86	16	0	173	9	251	74	43	0	565	9	0	556	170
1999999	Total Authorized and Unauthorized				1,882	426	0	5,343	258	4,038	503	920	12	11,500	440	0	11,061	170
9999999	Totals				1,882	426	0	5,343	258	4,038	503	920	12	11,500	440	0	11,061	170

SCHEDULE F - PART 4

Aging of Ceded Reinsurance as of December 31, Current Year (000 Omitted)

1	2	3	4	Reinsurance Recoverable on Paid Losses and Paid Loss Adjustment Expenses							12	13
				5	6	7	8	9	10	11		
Federal ID Number	NAIC Company Code	Name of Reinsured	Domicillary Jurisdition	Current	1 to 29 Days	30 to 90 Days	91 to 120 Days	Over 120 Days	Total Overdue Cols. 6 + 7 + 8 + 9	Total Due Cols. 5 + 10	Percentage Overdue Col. 10 / Col. 11	Percentage More Than 120 Days Overdue Col. 9 / Col. 11
Authorized Affiliates - U.S. Intercompany Pooling:												
0199999	Total Authorized - Affiliates- US Intercompany Pooling			0	0	0	0	0	0	0	0.0	0.0
	Total Authorized-Affiliates			0	0	0	0	0	0	0	0.0	0.0
Authorized Other - US Unaffilated Insurers												
31-123	11111	Good Reinsurer	AL	292	10	0	0	0	10	302	3.3	0.0
43-145	22222	Overdue Reinsurer	TX	0	0	0	0	10	10	10	100.0	100.0
76-345	33333	Slightly Overdue Reinsurer	NY	54	0	5	5	0	10	64	15.7	0.0
0599999	Total Authorized Other - US Unaffilated Insurers			346	10	5	5	10	30	376	8.0	2.6
Authorized Other Non-US Insurers												
33-1234	544445	Foreign Authorized	GB	26	0	0	8	0	8	34	23.5	0.0
0899999	Total Authorized Other Non-U.S. Insurers			26	0	0	8	0	8	34	23.5	0.0
0999999	Total Authorized			372	10	5	13	10	38	410	9.3	2.4
Unauthorized Affiliates												
1399999	Total Unauthorized Affiliates			0	0	0	0	0	0	0	0.0	0.0
Unauthorized Other-US Insurers												
13-1063	333	Reinsurer A	NY	3	0	0	5	0	5	8	59.3	0.0
11-0002	444	Reinsurer B	KS	0	0	0	2	0	2	3	94.9	5.1
11-0000	555	Reinsurer C	CA	2	0	0	0	0	0	2	0.0	0.0
	Total Unauthorized Other U.S. Insurers			6	0	0	7	0	7	13	56.5	1.0
Unauthorized Other Non-Us Insurers												
12-00001	66666	Reinsurer D	GB	0	1	0	0	0	1	1	100.0	0.0
12-00002	77777	Reinsurer E	GB	2	0	0	0	0	0	2	0.0	0.0
	Total Unauthorized Other Non-U.S. Insurers			2	1	0	0	0	1	3	32.0	0.0
1899999	Total Unauthorized			8	1	0	7	0	8	16	51.8	0.8
1999999	Tota Authorized and Unauthorized			380	11	5	20	10	46	426	10.9	2.4
	Totals			380	11	5	20	10	46	426	10.9	2.4

SCHEDULE F PART 5

Provision for Unauthorized Reinsurance as of December 31, Current Year (000 omitted)

1	2	3	4	5	6	7	Letter of Credit Issuing or Confirming Bank			11	12	13	14	15	16	17	18	19	20
							8	9	10										
Federal ID Number	NAIC Company Code	Name of Reinsurer	Domicillary Jurisdition	Reinsurance Recoverable all items Schedule F, Part 3, Col. 15.	Funds Held By Company Under Reinsurance Treaties	Letters of Credit	American Bankers Association (ABA) Routing Number	Letter of Credit Code	Bank Name	Ceded Balances Payable	Miscellaneous Business	Other Alowed Offset Items	Cols. 6 + 7 +11 +12+13 but not in Excess of Col 5.	Subtotal Col. 5 minus Col. 14	Recoverable Paid Losses & LAE Expenses Over 90 Days Past Due not in Dispute	20% of Amount in Col. 16	Smaller of Col. 14 or Col. 17	Smaller of Col 14 or 20% of Amount in Disputes Included in Col 5	Total Provision for Unauthorized Reinsurance Smaller of Col. 5 or Cols. 15 + 18 +19
Affiliates-Other Non-U.S. Insurers																			
0	0		0	0	0	0				0	0	0	0	0	0	0	0	0	-
0499999	Total Affiliates			0	0	0	XXX	XXX	XXX	0	0	0	0	0	0	0	0	0	0
Other U.S. Unaffiliated Insurers																			
13-1063	333	Reinsurer A	NY	42	20	0	0	0	0	0	0	0	20	22	5	1	1	0	23
11-0002	444	Reinsurer B	KS	170	0	93	123456	1	ABC Bank	3	0	0	96	74	2	0	0	0	75
11-0000	555	Reinsurer C	CA	148	20	0	0	0	0	3	0	0	23	125	0	0	0	10	135
0599999	Total Other U.S. Unaffiliated Insurers			360	40	93	XXX	XXX	XXX	6	0	0	139	222	7	1	1	10	233
Otner Non-US Insurers																			
12-00001	66666	Reinsurer D	GB	35	30	0	0	0	0	1	0	0	31	4	0	0	0	0	4
12-00002	77777	Reinsurer E	GB	170	100	68	55289	1	XYZ Bank	2	0	0	170	0	0	0	0	0	0
1799999	Total Other Non-U S Insurers			205	130	68	XXX	XXX	XXX	3	0	0	201	4	0	0	0	0	4
1899999	Total Affiliates and Others			565	170	161	XXX	XXX	XXX	8	0	0	339	226	7	1	1	10	237
9999999	Total			565	170	161	XXX	XXX	XXX	8	0	0	339	226	7	1	1	10	237

1. Amounts in dispute totaling $50,000 are included in Column 5.
2. Amounts in dispute totaling $.....0 are excluded in Column 16.

SCHEDULE F PART 6

Provision for Overdue Authorized Reinsurance as of December 31, Current Year

1 Federal ID Number	2 NAIC Company Code	3 Name of Reinsurer	4 Reinsurance Recoverable on Paid Losses and LAE More than 90 Days Overdue (a)	5 Total Reinsurance Recoverable on Paid Losses and Paid LAE (b)	6 Amounts Received Prior 90 Days	7 Col. 4 divided by (Cols. 5 + 6)	8 Amounts in Col. 4 for Companies Reporting less than 20% in Col 7	9 Amounts in Dispute Excluded from Col. 4 for Companies Reporting less than 20% in Col. 7	10 20% of Amount in Col. 9	11 Amount Reported in Col. 8 x 20% + Col. 10
Overdue Authorized Reinsurers										
0										
31-123	11111	Good Reinsurer	0	302,000	0	0.0	0	0	0	0
43-145	22222	Overdue Reinsurer	9,945	9,945	0	100.0	0	0	0	0
76-345	33333	Slightly Overdue Reinsurer	1,000	59,850	0	1.7	1,000	4,000	800	1,000
33-1234	544445	Foreign Authorized	8,000	34,053	0	23.5	0	0	0	0
999999	**Totals**		18,945	405,848	0	4.7	1,000	4,000	800	1,000

(a) From Schedule F-Part 4 Columns 8 + 9, total authorized, less $ 4,000 in dispute
(b) From Schedule F - Part 3 Columns 7 + 8, total authorized, less $ 4,000 in dispute

SCHEDULE F PART 7

Provision for Overdue Reinsurance as of December 31, Current Year

1 Federal ID Number	2 NAIC Company Code	3 Name of Reinsurer	4 Reinsurance Recoverable All Items	5 Funds Held by Company under Reinsurance Treaties	6 Letters of Credit	7 Ceded Balances Payable	8 Other Miscellaneous Balances	9 Other Allowed Offset Items	10 Sum of Cols. 5 through 9, but in Excess of Col. 4	11 Col. 4 Minus Col. 10	12 Greater of Col. 11 or Shedule F- Part 4 Cols. 8 + 9
Overdue Reinsurance											
43-145	22222	Overdue Reinsurer	745,000	0	515,000	13,000	0	0	528,000	217,000	217,000
33-1234	544445	Foreign Authorized	2,411,000	0	2,500,000	255,000	0	0	2,411,000	0	8,000
	Total		3,156,000	0	3,015,000	268,000	0	0	2,939,000	217,000	225,000

1. Total	225,000
2. Line 1 x .20	45,000
3. Schedule F - Part 6 Col. 11	1,000
4. Provision for Overdue Authorized Reinsurance (Lines 2 + 3)	46,000
5. Provision for Unauthorized Reinsurance (Schedule F Part 5, Col. 20 X1000)	237,000
6. Provision for Reinsurance (Sum Lines 4 + 5) (Enter this amount on page 3, line 16)	283,000

SCHEDULE P - ANALYSIS OF LOSSES AND LOSS EXPENSES
SCHEDULE P - PART 1 - SUMMARY

($000 Omitted)

Years in Which Premiums Were Earned and Losses Were Incurred	Premiums Earned			Loss and Loss Expense Payments								12
	1	2	3	Loss Payments		Defense and Cost Containment Payments		Adjusting and Other Payments		10	11	
				4	5	6	7	8	9			
	Direct and Assumed	Ceded	Net (Cols. 1 - 2)	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Salvage and Subrogation Received	Total Net Paid (Cols. 4 - 5 + 6 - 7 + 8 - 9)	Number of Claims Reported - Direct and Assumed
1. Prior	XXX	XXX	XXX	1,265	581	442	23	198	2	42	1,299	XXX
2. 2002	27,202	5,678	21,524	14,055	3,356	1,745	242	827	84	547	12,945	XXX
3. 2003	29,689	6,266	23,422	13,058	2,121	1,490	189	837	79	559	12,996	XXX
4. 2004	29,397	5,032	24,364	11,877	2,011	1,220	153	912	84	563	11,761	XXX
5. 2005	28,326	4,049	24,276	13,535	3,577	1,120	158	936	61	512	11,795	XXX
6. 2006	27,863	3,423	24,440	10,182	1,252	965	91	1,046	31	523	10,819	XXX
7. 2007	28,334	2,957	25,377	10,595	997	976	71	1,127	25	603	11,605	XXX
8. 2008	28,461	2,945	25,515	12,605	1,320	909	64	1,308	19	592	13,419	XXX
9. 2009	27,970	2,352	25,618	10,418	712	662	35	1,258	13	495	11,578	XXX
10. 2010	27,678	2,143	25,535	9,834	525	490	25	1,257	11	499	11,020	XXX
11. 2011	28,598	2,085	26,512	8,853	423	247	16	1,124	8	348	9,777	XXX
12. Totals	XXX	XXX	XXX	116,277	16,875	10,266	1,067	10,830	417	5,283	119,014	XXX

	Losses Unpaid				Defense and Cost Containment Unpaid				Adjusting and Other Unpaid		23	24	25
	Case Basis		Bulk + IBNR		Case Basis		Bulk + IBNR						
	13	14	15	16	17	18	19	20	21	22			
	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Direct and Assumed	Ceded	Salvage and Subrogation Anticipated	Total Net Losses and Expenses Unpaid	Number of Claims Outstanding - Direct and Assumed
1. Prior	9,567	2,968	7,719	1,416	908	165	1,545	138	1,024	3	23	16,073	XXX
2. 2002	665	219	645	139	57	9	168	35	43	0	4	1,176	XXX
3. 2003	617	110	779	235	70	12	160	29	129	1	36	1,368	XXX
4. 2004	601	162	686	200	61	5	159	30	47	0	19	1,157	XXX
5. 2005	664	208	956	271	65	9	175	28	46	0	29	1,390	XXX
6. 2006	834	176	1,141	249	92	5	193	23	65	0	38	1,872	XXX
7. 2007	924	128	1,427	290	135	7	298	25	70	0	72	2,404	XXX
8. 2008	1,619	165	1,690	288	195	9	456	48	135	0	144	3,585	XXX
9. 2009	2,028	363	2,255	282	240	10	539	50	160	0	175	4,517	XXX
10. 2010	2,827	219	3,224	287	283	12	739	47	231	0	269	6,739	XXX
11. 2011	4,599	625	5,808	381	318	15	969	46	649	0	554	11,276	XXX
12. Totals	24,945	5,343	26,330	4,038	2,424	258	5,401	499	2,599	4	1,363	51,557	XXX

	Total Losses and Loss Expenses Incurred			Loss and Loss Expense Percentage (Incurred /Premiums Earned)			Nontabular Discount		34	Net Balance Sheet Reserves after Discount	
	26	27	28	29	30	31	32	33		35	36
	Direct and Assumed	Ceded	Net (Cols. 26 - 27)	Direct and Assumed	Ceded	Net	Loss	Loss Expense	Inter-Company Pooling Participation Percentage	Losses Unpaid	Loss Expenses Unpaid
1. Prior	XXX	XXX	XXX	XXX	XXX	XXX	0	0	XXX	12,902	3,171
2. 2002	18,205	4,084	14,121	66.9	71.9	65.6	0	0	XXX	952	224
3. 2003	17,140	2,776	14,364	57.7	44.3	61.3	0	0	XXX	1,051	317
4. 2004	15,563	2,645	12,918	52.9	52.6	53.0	0	0	XXX	925	232
5. 2005	17,497	4,312	13,185	61.8	106.5	54.3	0	0	XXX	1,141	249
6. 2006	14,518	1,827	12,691	52.1	53.4	51.9	0	0	XXX	1,550	322
7. 2007	15,552	1,543	14,009	54.9	52.2	55.2	0	0	XXX	1,933	471
8. 2008	18,917	1,913	17,004	66.5	65.0	66.6	0	0	XXX	2,856	729
9. 2009	17,560	1,465	16,095	62.8	62.3	62.8	0	0	XXX	3,638	879
10. 2010	18,885	1,126	17,759	68.2	52.5	69.5	0	0	XXX	5,545	1,194
11. 2011	22,567	1,514	21,053	78.9	72.6	79.4	0	0	XXX	9,401	1,875
12. Totals	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	41,894	9,663

SCHEDULE P -PART 2 - SUMMARY

Years in Which Losses Were Incurred	Incurred Net Losses and Defense and Cost containment Expenses Reported at Year End ($000 omitted)										DEVELOPMENT	
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	11 One Year	12 Two Year
1. Prior	35,994	38,360	41,784	43,601	44,861	45,378	45,947	45,884	45,845	46,022	177	138
2. 2002	14,249	13,109	13,545	13,763	13,842	13,778	13,722	13,657	13,408	13,387	(21)	(270)
3. 2003	XXX	14,434	13,651	14,040	13,994	14,032	14,042	13,748	13,617	13,540	(77)	(208)
4. 2004	XXX	XXX	15,733	14,265	13,630	13,209	12,726	12,485	12,288	12,099	(189)	(386)
5. 2005	XXX	XXX	XXX	15,982	14,733	14,195	13,210	12,768	12,445	12,321	(124)	(447)
6. 2006	XXX	XXX	XXX	XXX	13,501	13,051	12,370	12,056	11,837	11,679	(158)	(377)
7. 2007	XXX	XXX	XXX	XXX	XXX	13,938	13,629	13,303	13,265	12,895	(370)	(408)
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	15,980	16,106	16,015	15,635	(380)	(471)
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	14,917	14,851	14,745	(106)	(172)
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	15,972	16,345	373	XXX
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	19,364	XXX	XXX
										12. Totals	(875)	(2,601)

SCHEDULE P -PART 3 - SUMMARY

Years in Which Losses Were Incurred	Cummulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year End ($000 omitted)										11	12
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	Number of Claims Closed with Loss Payment	Number of Claims Closed Without Loss Payment
1. Prior	0	9,061	13,830	18,110	21,281	23,728	26,341	27,752	29,108	30,210	XXX	XXX
2. 2002	3,881	6,637	8,297	9,620	10,627	11,289	11,686	11,961	12,108	12,202	XXX	XXX
3. 2003	XXX	4,121	7,109	9,011	10,142	11,035	11,552	11,847	12,070	12,238	XXX	XXX
4. 2004	XXX	XXX	4,061	6,981	8,385	9,439	10,067	10,485	10,772	10,933	XXX	XXX
5. 2005	XXX	XXX	XXX	4,376	7,649	8,904	9,766	10,329	10,724	10,919	XXX	XXX
6. 2006	XXX	XXX	XXX	XXX	4,208	6,630	7,898	8,803	9,481	9,804	XXX	XXX
7. 2007	XXX	XXX	XXX	XXX	XXX	4,591	7,325	8,821	9,846	10,503	XXX	XXX
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	6,026	9,265	10,971	12,130	XXX	XXX
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	5,626	8,740	10,332	XXX	XXX
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6,278	9,774	XXX	XXX
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	8,660	XXX	XXX

SCHEDULE P -PART 4 - SUMMARY

Years in Which Losses Were Incurred	Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End ('000 omitted)									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	17,126	14,330	13,764	12,807	12,285	11,632	10,529	9,752	8,907	8,088
2. 2002	7,093	3,349	2,393	1,821	1,445	1,249	1,121	1,010	728	677
3. 2003	XXX	7,149	3,583	2,544	1,799	1,479	1,370	1,016	814	713
4. 2004	XXX	XXX	8,512	4,667	3,068	2,149	1,505	1,122	864	651
5. 2005	XXX	XXX	XXX	7,337	4,644	3,505	2,131	1,522	1,030	876
6. 2006	XXX	XXX	XXX	XXX	6,333	4,175	2,757	1,959	1,440	1,114
7. 2007	XXX	XXX	XXX	XXX	XXX	6,022	3,756	2,640	2,018	1,459
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	6,400	3,932	2,810	1,850
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6,008	3,544	2,511
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	5,817	3,682
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	6,422

SCHEDULE P - ANALYSIS OF LOSSES AND LOSS EXPENSES

SCHEDULE P - PART 1A - HOMEOWNERS/FARMOWNERS

($000 Omitted)

Years in Which Premiums Were Earned and Losses Were Incurred	Premiums Earned			Loss and Loss Expense Payments								12
	1	2	3	Loss Payments		Defense and Cost Containment Payments		Adjusting and Other Payments		10	11	Number of Claims Reported - Direct and Assumed
	Direct and Assumed	Ceded	Net (Cols. 1 - 2)	4 Direct and Assumed	5 Ceded	6 Direct and Assumed	7 Ceded	8 Direct and Assumed	9 Ceded	Salvage and Subrogation Received	Total Net Paid (Cols. 4 - 5 + 6 - 7 + 8 - 9)	
1. Prior	XXX	XXX	XXX	2	0	0	0	0	0	0	2	XXX
2. 2002	1,931	168	1,763	983	75	38	4	97	4	18	1,035	242
3. 2003	2,251	167	2,084	1,129	59	40	4	114	0	20	1,220	253
4. 2004	2,721	109	2,612	1,375	65	73	4	130	0	21	1,509	219
5. 2005	3,123	123	3,000	1,585	272	56	1	162	0	26	1,530	217
6. 2006	3,307	76	3,231	1,302	1	40	0	193	0	36	1,534	216
7. 2007	3,609	102	3,507	1,343	2	46	0	212	0	63	1,599	194
8. 2008	3,816	103	3,713	2,093	1	53	0	268	0	39	2,413	300
9. 2009	4,003	108	3,895	2,099	6	54	0	257	0	37	2,404	296
10. 2010	4,294	116	4,178	2,249	2	48	0	294	0	27	2,589	325
11. 2011	4,550	105	4,445	2,968	3	38	0	343	0	10	3,346	427
12. Totals	XXX	XXX	XXX	17,128	486	486	13	2,073	4	297	19,184	XXX

	Losses Unpaid				Defense and Cost Containment Unpaid				Adjusting and Other Unpaid		23	24	25
	Case Basis		Bulk + IBNR		Case Basis		Bulk + IBNR					Total Net	
	13 Direct and Assumed	14 Ceded	15 Direct and Assumed	16 Ceded	17 Direct and Assumed	18 Ceded	19 Direct and Assumed	20 Ceded	21 Direct and Assumed	22 Ceded	Salvage and Subrogation Anticipated	Losses and Expenses Unpaid	Number of Claims Outstanding Direct and Assumed
1. Prior	4	0	0	0	0	0	0	0	3	0	0	7	1
2. 2002	0	0	0	0	0	0	0	0	3	0	0	3	1
3. 2003	1	0	0	0	0	0	0	0	3	0	0	4	1
4. 2004	2	0	0	0	0	0	0	0	3	0	0	5	1
5. 2005	3	3	58	13	0	0	0	0	3	0	1	48	1
6. 2006	8	0	0	1	0	0	0	0	3	0	2	10	1
7. 2007	16	0	0	0	2	0	0	0	3	0	4	21	1
8. 2008	37	0	13	1	3	0	3	0	2	0	8	57	1
9. 2009	55	0	7	(3)	6	0	7	0	4	0	13	82	1
10. 2010	115	0	69	0	9	0	8	0	9	0	28	210	3
11. 2011	351	0	587	0	15	0	4	0	56	0	66	1,013	21
12. Totals	592	3	734	12	35	0	22	0	89	0	122	1,457	33

	Total Losses and Loss Expenses Incurred			Loss and Loss Expense Percentage (Incurred /Premiums Earned)			Nontabular Discount		34	Net Balance Sheet Reserves after Discount	
	26 Direct and Assumed	27 Ceded	28 Net (Cols. 26 - 27)	29 Direct and Assumed	30 Ceded	31 Net	32 Loss	33 Loss Expense	Inter-Company Pooling Participation Percentage	35 Losses Unpaid	36 Loss Expenses Unpaid
1. Prior	XXX	XXX	XXX	XXX	XXX	XXX	0	0	XXX	4	3
2. 2002	1,121	83	1,038	58.1	49.4	58.9	0	0	XXX	0	3
3. 2003	1,287	63	1,224	57.2	37.7	58.7	0	0	XXX	1	3
4. 2004	1,583	69	1,514	58.2	63.3	58.0	0	0	XXX	2	3
5. 2005	1,867	289	1,578	59.8	235.0	52.6	0	0	XXX	45	3
6. 2006	1,546	2	1,544	46.7	2.6	47.8	0	0	XXX	7	3
7. 2007	1,622	2	1,620	44.9	2.0	46.2	0	0	XXX	16	5
8. 2008	2,472	2	2,470	64.8	1.9	66.5	0	0	XXX	49	8
9. 2009	2,489	3	2,486	62.2	2.8	63.8	0	0	XXX	65	17
10. 2010	2,801	2	2,799	65.2	1.7	67.0	0	0	XXX	184	26
11. 2011	4,362	3	4,359	95.9	2.9	98.1	0	0	XXX	938	75
12. Totals	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,311	146

SCHEDULE P - ANALYSIS OF LOSSES AND LOSS EXPENSES

SCHEDULE P - PART 1C-COMMERCIAL AUTO

($000 Omitted)

Years in Which Premiums Were Earned and Losses were Incurred	Premiums Earned			Loss and Loss Expense Payments								12
	1	2	3	Loss Payments		Defense and Cost Containment Payments		Adjusting and Other Payments		10	11	Number of Claims Reported - Direct and Assumed
	Direct and Assumed	Ceded	Net (Cols. 1 - 2)	4 Direct and Assumed	5 Ceded	6 Direct and Assumed	7 Ceded	8 Direct and Assumed	9 Ceded	Salvage and Subrogation Received	Total Net Paid (Cols. 4 - 5 + 6 - 7 + 8 - 9)	
1. Prior	XXX	XXX	XXX	17	6	3	0	15	0	(1)	29	XXX
2. 2002	2,906	545	2,361	1,607	318	149	39	105	6	20	1,498	219
3. 2003	3,128	507	2,620	1,555	254	141	29	99	4	15	1,509	195
4. 2004	2,879	489	2,389	1,363	227	125	26	106	4	15	1,336	177
5. 2005	2,904	388	2,515	1,175	152	120	24	104	3	12	1,220	155
6. 2006	2,592	271	2,321	1,094	138	103	21	104	3	16	1,140	143
7. 2007	2,476	150	2,326	1,134	102	110	18	116	2	14	1,238	139
8. 2008	2,387	173	2,213	1,001	83	91	12	138	1	12	1,133	149
9. 2009	2,374	142	2,232	794	39	55	5	107	1	12	911	128
10. 2010	2,302	113	2,190	608	25	28	2	103	1	12	711	132
11. 2011	2,305	83	2,222	307	8	7	1	73	1	7	378	134
12. Totals	XXX	XXX	XXX	10,654	1,349	932	177	1,069	27	134	11,103	XXX

	Losses Unpaid				Defense and Cost Containment Unpaid				Adjusting and Other Unpaid		23	24	25
	Case Basis		Bulk + IBNR		Case Basis		Bulk + IBNR						
	13 Direct and Assumed	14 Ceded	15 Direct and Assumed	16 Ceded	17 Direct and Assumed	18 Ceded	19 Direct and Assumed	20 Ceded	21 Direct and Assumed	22 Ceded	Salvage and Subrogation Anticipated	Total Net Losses and Expenses Unpaid	Number of Claims Outstanding Direct and Assumed
1. Prior	186	136	71	21	4	1	11	1	2	0	0	115	1
2. 2002	7	2	18	2	1	0	5	1	2	0	0	28	1
3. 2003	13	4	25	5	4	2	4	(1)	2	0	0	38	1
4. 2004	14	2	39	14	2	0	5	1	2	0	0	45	1
5. 2005	90	27	45	15	5	(0)	17	4	2	0	0	114	1
6. 2006	48	4	56	7	7	1	8	0	2	0	0	109	1
7. 2007	103	9	60	15	12	2	6	1	4	0	1	158	2
8. 2008	208	12	78	25	22	2	9	1	8	0	1	284	4
9. 2009	325	27	156	10	31	2	22	3	15	0	2	506	7
10. 2010	498	45	268	18	37	3	41	2	27	0	4	804	13
11. 2011	529	18	573	17	35	2	62	1	89	0	8	1,250	42
12. Totals	2,020	285	1,389	150	159	15	190	13	156	1	18	3,451	74

	Total Losses and Loss Expenses Incurred			Loss and Loss Expense Percentage (Incurred /Premiums Earned)			Nontabular Discount		34	Net Balance Sheet Reserves after Discount	
	26 Direct and Assumed	27 Ceded	28 Net (Cols. 26 - 27)	29 Direct and Assumed	30 Ceded	31 Net	32 Loss	33 Loss Expense	Inter-Company Pooling Participation Percentage	35 Losses Unpaid	36 Loss Expenses Unpaid
1. Prior	XXX	XXX	XXX	XXX	XXX	XXX	0	0	XXX	100	15
2. 2002	1,894	368	1,526	65.2	67.4	64.6	0	0	XXX	20	8
3. 2003	1,844	297	1,547	59.0	58.5	59.0	0	0	XXX	29	9
4. 2004	1,654	274	1,381	57.5	56.0	57.8	0	0	XXX	36	9
5. 2005	1,558	224	1,334	53.7	57.8	53.0	0	0	XXX	94	20
6. 2006	1,422	173	1,249	54.9	63.9	53.8	0	0	XXX	93	16
7. 2007	1,545	148	1,397	62.4	98.6	60.1	0	0	XXX	139	19
8. 2008	1,554	137	1,417	65.1	78.9	64.0	0	0	XXX	249	35
9. 2009	1,504	88	1,416	63.4	61.8	63.5	0	0	XXX	443	62
10. 2010	1,610	95	1,515	69.9	84.4	69.2	0	0	XXX	704	100
11. 2011	1,675	47	1,628	72.7	57.1	73.3	0	0	XXX	1,068	182
12. Totals	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,975	476

SCHEDULE P -PART 2A-HOMEOWNERS/FARMOWNERS

Years in Which Losses Were Incurred	Incurred Net Losses and Defense and Cost containment Expenses Reported at Year End ($000 omitted)										DEVELOPMENT	
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	11 One Year	12 Two Year
1. Prior	316	260	238	227	215	205	204	207	206	206	0	(1)
2. 2002	1,152	980	948	948	947	945	945	943	943	942	(1)	(1)
3. 2003	XXX	1,349	1,126	1,138	1,116	1,113	1,110	1,109	1,108	1,107	(1)	(2)
4. 2004	XXX	XXX	1,362	1,387	1,386	1,379	1,382	1,377	1,378	1,381	3	4
5. 2005	XXX	XXX	XXX	1,850	1,596	1,608	1,519	1,418	1,405	1,413	8	(5)
6. 2006	XXX	XXX	XXX	XXX	1,369	1,355	1,342	1,352	1,354	1,348	(6)	(4)
7. 2007	XXX	XXX	XXX	XXX	XXX	1,493	1,471	1,401	1,406	1,405	(1)	4
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	2,236	2,234	2,210	2,200	(10)	(34)
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,179	2,239	2,225	(14)	46
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,577	2,496	(81)	XXX
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3,960	XXX	XXX
										12. Totals	(103)	7

SCHEDULE P -PART 2C-COMMERCIAL AUTO/TRUCK LIABILITY/MEDICAL

Years in Which	Incurred Net Losses and Defense and Cost containment Expenses Reported at Year End ($000 omitted)										DEVELOPMENT	
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	11 One Year	12 Two Year
1. Prior	1,852	2,032	1,994	2,069	2,041	1,962	1,968	1,966	1,957	1,980	23	14
2. 2002	1,551	1,502	1,527	1,519	1,514	1,478	1,467	1,461	1,426	1,425	(1)	(36)
3. 2003	XXX	1,672	1,636	1,594	1,566	1,535	1,499	1,483	1,451	1,449	(2)	(34)
4. 2004	XXX	XXX	1,649	1,483	1,393	1,349	1,325	1,317	1,292	1,277	(15)	(40)
5. 2005	XXX	XXX	XXX	1,462	1,383	1,314	1,265	1,267	1,255	1,230	(25)	(37)
6. 2006	XXX	XXX	XXX	XXX	1,331	1,273	1,208	1,171	1,163	1,146	(17)	(25)
7. 2007	XXX	XXX	XXX	XXX	XXX	1,403	1,353	1,235	1,299	1,279	(20)	44
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	1,368	1,177	1,264	1,273	9	96
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,318	1,240	1,296	56	(22)
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,294	1,387	93	XXX
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,467	XXX	XXX
										12. Totals	101	(40)

SCHEDULE P -PART 3A - HOMEOWNERS/FARMOWNERS

Years in Which Losses Were Incurred	Cummulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year End ($000 omitted)										11	12
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	Number of Claims Closed with Loss Payment	Number of Claims Closed Without Loss Payment
1. Prior	0	96	146	168	183	189	195	198	200	202	0	0
2. 2002	634	865	902	922	933	937	940	941	941	942	203	38
3. 2003	XXX	768	1,025	1,070	1,090	1,099	1,102	1,103	1,105	1,106	218	34
4. 2004	XXX	XXX	821	1,245	1,321	1,347	1,360	1,368	1,373	1,379	184	34
5. 2005	XXX	XXX	XXX	936	1,296	1,318	1,345	1,348	1,359	1,368	189	27
6. 2006	XXX	XXX	XXX	XXX	936	1,239	1,299	1,325	1,339	1,341	195	19
7. 2007	XXX	XXX	XXX	XXX	XXX	961	1,302	1,342	1,373	1,387	177	16
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	1,512	2,009	2,099	2,145	275	23
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,556	2,063	2,147	269	25
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	1,740	2,295	296	25
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	3,003	382	24

SCHEDULE P -PART 3C - COMMERCIAL AUTO/TRUCK LIABILITY/MEDICAL

Years in Which Losses Were Incurred	Cummulative Paid Net Losses and Defense and Cost Containment Expenses Reported at Year End ($000 omitted)										11	12
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	Number of Claims Closed with Loss Payment	Number of Claims Closed Without Loss Payment
1. Prior	0	816	1,217	1,512	1,662	1,743	1,785	1,837	1,851	1,865	0	0
2. 2002	249	591	874	1,121	1,256	1,344	1,372	1,391	1,397	1,399	139	78
3. 2003	XXX	265	573	919	1,133	1,295	1,351	1,380	1,409	1,413	124	70
4. 2004	XXX	XXX	232	549	826	1,012	1,145	1,193	1,223	1,234	112	64
5. 2005	XXX	XXX	XXX	212	490	744	924	1,041	1,092	1,119	94	60
6. 2006	XXX	XXX	XXX	XXX	212	494	716	887	1,000	1,039	84	57
7. 2007	XXX	XXX	XXX	XXX	XXX	241	549	804	1,003	1,125	87	60
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	238	506	789	997	85	59
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	234	529	805	70	50
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	270	610	66	51
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	306	49	42

SCHEDULE P -PART 4A - HOMEOWNERS

Years in Which Losses Were Incurred	Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End ('000 omitted)									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	167	72	34	26	13	4	1	1	0	0
2. 2002	371	61	14	8	4	1	0	0	1	0
3. 2003	XXX	409	34	30	5	2	1	1	1	0
4. 2004	XXX	XXX	351	49	18	7	8	0	0	0
5. 2005	XXX	XXX	XXX	680	245	264	165	59	34	45
6. 2006	XXX	XXX	XXX	XXX	229	25	(2)	1	0	(1)
7. 2007	XXX	XXX	XXX	XXX	XXX	257	58	(2)	(1)	0
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	445	96	36	15
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	323	50	17
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	518	77
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	591

SCHEDULE P -PART 4C -COMMERCIAL AUTO/TRUCK LIABILITY/MEDICAL

Losses Were	Bulk and IBNR Reserves on Net Losses and Defense Cost Containment Expenses Reported at Year End ('000 omitted)									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	452	453	283	265	199	106	117	88	71	60
2. 2002	807	380	259	166	120	70	62	54	21	20
3. 2003	XXX	869	465	268	174	110	70	52	26	25
4. 2004	XXX	XXX	906	430	227	126	75	80	44	30
5. 2005	XXX	XXX	XXX	725	411	221	89	73	43	44
6. 2006	XXX	XXX	XXX	XXX	671	360	191	105	67	56
7. 2007	XXX	XXX	XXX	XXX	XXX	705	378	134	104	50
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	654	229	134	60
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	663	265	164
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	519	290
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	617

SCHEDULE P -PART 5A HOMEOWNERS/FARMOWNERS

SECTION 1

Years in Which Premiums were Earned and Losses were Incurred	Cummulative Number of Claims Closed with Loss Payment Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	51	7	3	1	1	0	0	0	0	0
2. 2002	166	199	202	202	203	203	203	203	203	203
3. 2003	XXX	186	214	216	217	218	218	218	218	218
4. 2004	XXX	XXX	149	180	182	183	184	184	184	184
5. 2005	XXX	XXX	XXX	155	185	187	188	189	189	190
6. 2006	XXX	XXX	XXX	XXX	166	191	194	195	195	196
7. 2007	XXX	XXX	XXX	XXX	XXX	147	173	176	177	177
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	225	270	274	275
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	219	266	269
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	254	296
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	382

SECTION 2

Years in Which Premiums were Earned and Losses were Incurred	Number of Claims Outstanding Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	11	5	3	2	1	1	1	1	1	1
2. 2002	20	5	3	3	2	1	1	1	1	1
3. 2003	XXX	19	4	2	1	1	1	1	1	1
4. 2004	XXX	XXX	22	5	2	1	1	1	1	1
5. 2005	XXX	XXX	XXX	25	4	3	1	1	1	1
6. 2006	XXX	XXX	XXX	XXX	14	3	1	1	1	1
7. 2007	XXX	XXX	XXX	XXX	XXX	15	3	2	1	1
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	19	4	2	1
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	19	3	1
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	19	3
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	21

SECTION 3

Years in Which Premiums were Earned and Losses were Incurred	Cummulative Number of Claims Reported Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	31	2	1	0	0	0	0	0	0	0
2. 2002	215	241	241	241	241	241	242	242	242	242
3. 2003	XXX	235	252	253	253	253	253	253	253	253
4. 2004	XXX	XXX	199	219	219	219	219	219	219	219
5. 2005	XXX	XXX	XXX	203	216	217	217	217	217	217
6. 2006	XXX	XXX	XXX	XXX	197	214	215	215	216	216
7. 2007	XXX	XXX	XXX	XXX	XXX	175	193	194	194	194
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	263	297	299	300
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	260	295	296
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	295	325
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	427

SCHEDULE P -PART 5C-COMMERCIAL AUTO/TRUCK LIABILITY/MEDICAL

SECTION 1

Years in Which Premiums were Earned and Losses were Incurred	Cummulative Number of Claims Closed with Loss Payment Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	53	23	18	7	3	(1)	2	1	1	1
2. 2002	84	118	133	138	139	139	139	140	140	140
3. 2003	XXX	77	112	119	122	123	124	124	125	125
4. 2004	XXX	XXX	75	102	107	110	112	112	113	113
5. 2005	XXX	XXX	XXX	62	84	89	92	93	94	94
6. 2006	XXX	XXX	XXX	XXX	51	74	8	82	83	84
7. 2007	XXX	XXX	XXX	XXX	XXX	52	79	84	86	88
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	58	79	83	86
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	45	66	71
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	47	67
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	49

SECTION 2

Years in Which Premiums were Earned and Losses were Incurred	Number of Claims Outstanding Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	38	20	13	7	6	4	3	3	2	1
2. 2002	34	15	9	4	3	1	1	1	1	1
3. 2003	XXX	31	15	6	5	2	1	1	1	1
4. 2004	XXX	XXX	6,354	10	8	4	2	1	1	1
5. 2005	XXX	XXX	XXX	26	14	7	4	2	1	1
6. 2006	XXX	XXX	XXX	XXX	38	13	7	4	2	1
7. 2007	XXX	XXX	XXX	XXX	XXX	38	13	7	4	2
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	37	13	7	4
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	38	13	7
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	40	13
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	42

SECTION 3

Years in Which Premiums were Earned and Losses were Incurred	Cummulative Number of Claims Reported Direct and Assumed at Year End									
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011
1. Prior	40	16	18	6	3	(2)	2	1	1	0
2. 2002	168	202	217	218	220	218	218	219	219	219
3. 2003	XXX	153	193	193	196	196	196	195	195	195
4. 2004	XXX	XXX	6,354	171	177	177	178	177	177	177
5. 2005	XXX	XXX	XXX	128	154	155	156	155	155	155
6. 2006	XXX	XXX	XXX	XXX	124	141	143	143	143	143
7. 2007	XXX	XXX	XXX	XXX	XXX	13	149	150	150	139
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	141	149	149	149
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	121	127	128
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	126	132
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	134

SCHEDULE P -PART 6C-COMMERCIAL AUTO/TRUCK LIABILITY/MEDICAL

SECTION 1

Years in Which Premiums Were Earned and Losses Were Incurred	Cummulative Premiums Earned Direct and Assumed at Year End ($000 omitted)										11
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	Current Year Premiums Earned
1. Prior	256	16	38	6	(12)	16	(1)	0	3	3	3
2. 2002	2,651	2,903	2,914	2,915	2,906	2,906	2,905	2,905	2,905	2,905	0
3. 2003	XXX	2,859	3,146	3,197	3,185	3,183	3,180	3,180	3,186	3,185	(1)
4. 2004	XXX	XXX	2,544	2,897	2,930	2,922	2,917	2,916	2,919	2,919	(0)
5. 2005	XXX	XXX	XXX	2,491	2,663	2,676	2,665	2,666	2,665	2,664	(0)
6. 2006	XXX	XXX	XXX	XXX	2,421	2,484	2,480	2,481	2,477	2,476	(1)
7. 2007	XXX	XXX	XXX	XXX	XXX	2,392	2,408	2,415	2,403	2,404	1
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	2,397	2,419	2,422	2,421	(1)
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,344	2,346	2,340	(5)
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,302	2,328	26
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,283	2,283
12. Total	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	2,305
13. Earned Premium P -Pt1	2,906	3,128	2,879	2,904	2,592	2,476	2,387	2,374	2,302	2,305	XXX

SECTION 2

Years in Which Premiums Were Earned and Losses Were Incurred	Cummulative Premiums Earned Ceded at Year End ($000 omitted)										11
	1 2002	2 2003	3 2004	4 2005	5 2006	6 2007	7 2008	8 2009	9 2010	10 2011	Current Year Premiums Earned
1. Prior	173	21	(7)	(4)	0	(0)	1	(0)	0	0	0
2. 2002	373	498	507	510	508	508	508	508	508	508	0
3. 2003	XXX	361	502	530	526	525	526	526	527	527	0
4. 2004	XXX	XXX	345	479	513	511	513	513	513	513	0
5. 2005	XXX	XXX	XXX	228	248	246	248	248	248	248	0
6. 2006	XXX	XXX	XXX	XXX	223	238	242	244	247	248	0
7. 2007	XXX	XXX	XXX	XXX	XXX	140	134	142	150	150	0
8. 2008	XXX	XXX	XXX	XXX	XXX	XXX	170	117	117	118	0
9. 2009	XXX	XXX	XXX	XXX	XXX	XXX	XXX	184	199	200	1
10. 2010	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	87	97	10
11. 2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	71	71
12. Total	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	83
13. Earned Premium P -Pt1	545	507	490	388	271	150	173	142	113	83	XXX

EXCERPTS FROM THE 2011 INSURANCE EXPENSE EXHIBIT FOR FICTITIOUS INSURANCE COMPANY

INSURANCE EXPENSE EXHIBIT

FOR THE YEAR ENDED DECEMBER, 31, 2011
(To Be Filed by April 1)

OF THE Fictitious Insurance Company
ADDRESS
NAIC Group Code _____ NAIC Company Code _____ Federal Employer's Identification Number (FEIN) _____
Contact Person _____ Title _____ Telephone _____

PART I - ALLOCATION TO EXPENSE GROUPS

(000 Omitted)

	1	Other Underwriting Expenses			5	6
Operating Expense Classifications	Loss Adjustment Expense	2 Acquisition, Field Supervision and Collection Expenses	3 General Expenses	4 Taxes, Licenses and Fees	Investment Expenses	Total Expenses
1. Claim adjustment services:						
1.1 Direct	1,881	0	0	0	0	1,881
1.2 Reinsurance assumed	0	0	0	0	0	0
1.3 Reinsurance ceded	210	0	0	0	0	210
1.4 Net claim adjustment services (1.1+1.2-1.3)	1,671	0	0	0	0	1,671
2. Commission and brokerage:						
2.1 Direct excluding contingent	0	4,759	0	0	0	4,759
2.2 Reinsurance assumed excluding contingent	0	0	0	0	0	0
2.3 Reinsurance ceded excluding contingent	0	816	0	0	0	816
2.4 Contingent - direct	0	121	0	0	0	121
2.5 Contingent - reinsurance assumed	0	0	0	0	0	0
2.6 Contingent - reinsurance ceded	0	9	0	0	0	9
2.7 Policy and membership fees	0	0	0	0	0	0
2.8 Net commission and brokerage (Lines 2.1+2.2-2.3+2.4+2.5-2.6+2.7)	0	4,055	0	0	0	4,055
3. Allowances to managers and agents	0	1	3	0	0	4
4. Advertising	0	75	133	0	0	208
5. Boards, bureaus and associations	7	38	68	0	0	113
6. Surveys and underwriting reports	0	36	63	0	0	99
7. Audit of assureds' records	0	0	0	0	0	0
8. Salary and related items:						
8.1 Salaries	949	664	1,181	0	32	2,826
8.2 Payroll taxes	69	41	74	0	0	184
9. Employee relations and welfare	182	105	188	0	3	478
10. Insurance	117	8	15	0	0	140
11. Directors' fees	0	0	0	0	0	0
12. Travel and travel items	64	34	61	0	0	159
13. Rent and rent items	62	48	85	0	1	196
14. Equipment	11	15	27	0	3	56
15. Cost or depreciation of EDP equipment and software	30	119	211	0	0	360
16. Printing and stationery	5	7	12	0	0	24
17. Postage, telephone and telegraph, exchange and express	19	40	72	0	0	131
18. Legal and auditing	44	5	9	0	2	60
19. Totals (Lines 3 to 18)	1,559	1,236	2,202	0	41	5,038
20. Taxes, licenses and fees:						
20.1 State and local insurance taxes deducting guaranty association credit of $ 1,103	0	0	0	791	0	791
20.2 Insurance department licenses and fees	0	0	0	53	0	53
20.3 Gross guaranty association assessments	0	0	0	(2)	0	(2)
20.4 All other (excluding federal and foreign income and real estate)	0	0	0	0		0
		0	0	18	0	18
20.5 Total taxes, licenses and fees (Lines 20.1+20.2+20.3+20.4)	0	0	0	860	0	860
21. Real estate expenses	0	0	0	0	332	332
22. Real estate taxes	0	0	0	0	14	14
23. Reimbursements by uninsured plans	XXX	XXX	XXX	XXX	XXX	XXX
24. Aggregate write-ins for miscellaneous operating expenses	25	47	83	0	6	161
25. TOTAL EXPENSES INCURRED	3,255	5,338	2,285	860	393	12,131

PART II - ALLOCATION TO LINES OF BUSINESS NET OF REINSURANCE

PREMIUMS, LOSSES, EXPENSES, RESERVES AND PROFITS AND PERCENTAGES TO PREMIUMS EARNED FOR BUSINESS NET OF REINSURANCE (000 Omitted)

		Premiums Written (Pg. 8, Pt. 1B, Col. 6)		Premiums Earned (Pg. 6, Pt. 1, Col. 4)		Dividends to Policyholders (Pg. 4, Line 17)		Incurred Loss (Pg. 9, Pt. 2, Col. 7)		Loss Adjustment Expense: Defense and Cost Containment Expenses Incurred		Loss Adjustment Expense: Adjusting and Other Expenses Incurred		Unpaid Losses (Pg. 10, Pt. 2A, Col. 8)		Loss Adjustment Expense: Defense and Cost Containment Expenses Unpaid		Loss Adjustment Expense: Adjusting and Other Expenses Unpaid		Unearned Premium Reserves (Pg. 7, Pt. 1A, Col. 5)		Agents' Balances	
		1 Amount	2 %	3 Amount	4 %	5 Amount	6 %	7 Amount	8 %	9 Amount	10 %	11 Amount	12 %	13 Amount	14 %	15 Amount	16 %	17 Amount	18 %	19 Amount	20 %	21 Amount	22 %
1.	Fire	2,484	XXX	2,509	100.0	1	0.0	1,554	61.9	51	2.0	129	5.1	1,402	55.9	92	3.7	130	5.2	1,133	45.1	385	15.3
2.1	Allied Lines	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.2	Multiple Peril Crop	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.3	Federal Flood	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3.	Farmowners Multiple Peril	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4.	Homeowners Multiple Peril	4,555	XXX	4,445	100.0	0	0.0	3,789	85.2	74	1.7	360	8.1	1,311	29.5	55	1.2	89	2.0	2,401	54.0	1,901	42.8
5.1	Commercial Multiple Peril (Non-Liability Portion)	3,032	XXX	3,034	100.0	(0)	(0.0)	1,155	38.1	82	2.7	119	3.9	672	22.1	83	2.7	106	3.5	1,377	45.1	606	19.9
5.2	Commercial Multiple Peril (Liability Portion)	1,645	XXX	1,659	100.0	0	0.0	969	58.4	314	18.9	41	2.5	2,639	159.1	1,024	61.7	258	15.6	746	45.0	447	26.9
6.	Mortgage Guaranty	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8.	Ocean Marine	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9.	Inland Marine	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10.	Financial Guaranty	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11.	Medical Professional Liability	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
12.	Earthquake	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
13.	Group A&H (See Interrogatory 1)	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
14.	Credit A & H	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15.	Other A&H (See Interrogatory 1)	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16.	Workers' Compensation	4,022	XXX	3,943	100.0	42	1.1	318	8.1	426	10.8	(31)	(0.8)	13,833	350.8	1,639	41.6	474	12.0	1,520	38.5	1,282	32.5
17.1	Other Liability - Occurrence	3,502	XXX	3,548	100.0	1	0.0	4,110	115.8	483	13.6	299	8.4	16,050	452.4	3,466	97.3	1,175	33.1	1,648	46.4	785	22.1
17.2	Other Liability - Claims-made	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
17.3	Excess Workers' Compensation	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
18.	Products Liability	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
19.1,19.2	Private Passenger Auto Liability	2,804	XXX	2,732	100.0	0	0.0	1,791	65.6	81	3.0	244	8.9	2,083	76.2	238	8.7	161	5.9	954	34.9	475	17.4
19.3,19.4	Commercial Auto Liability	2,250	XXX	2,223	100.0	1	0.0	1,432	64.4	130	5.9	144	6.5	2,974	133.8	321	14.4	155	7.0	1,014	45.6	758	34.1
21.1	Private Passenger Auto Physical Damage	1,665	XXX	1,632	100.0	0	0.0	1,072	65.7	2	0.1	222	13.7	37	2.3	2	0.1	20	1.2	554	34.3	283	17.5
21.2	Commercial Auto Physical Damage	647	XXX	646	100.0	0	0.1	456	70.6	15	2.3	54	8.4	177	27.4	51	7.9	23	3.6	291	45.0	213	33.0
22.	Aircraft (all perils)	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23.	Fidelity	146	XXX	141	100.0	0	0.3	261	185.1	13	9.2	4	2.8	716	336.9	97	68.8	4	2.8	53	37.6	37	26.2
24.	Surety	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
26.	Burglary and Theft	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
27.	Boiler and Machinery	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
28.	Credit	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
29.	International	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30.	Warranty	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
31, 32, 33	Reinsurance-Nonproportional Assumed	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
34.	Aggregate write-ins for Other Lines of Business	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35.	TOTALS (Lines 1 through 34)	26,752	XXX	26,512	100.0	46	0.2	16,907	63.8	1,671	6.3	1,585	6.0	41,894	158.0	7,068	26.6	2,595	9.8	11,691	44.1	7,172	27.1

PART II - ALLOCATION TO LINES OF BUSINESS NET OF REINSURANCE (Continued)

PREMIUMS, LOSSES, EXPENSES, RESERVES AND PROFITS AND PERCENTAGES TO PREMIUMS EARNED FOR BUSINESS NET OF REINSURANCE (000 Omitted)

		Commission and Brokerage Expenses Incurred (IEE Pt. 1, Line 2.8, Col. 2)		Taxes, Licenses & Fees Incurred (IEE Pt. 1, Line 20.5, Col. 4)		Other Acquisitions, Field Supervision, and Collection Expenses Incurred (IEE Pt. 1, Line 25 minus 2.8 Col. 2)		General Expenses Incurred (IEE Pt. 1, Line 25, Col. 3)		Other Income Less Other Expenses (Pg. 4, Line 15 minus Line 5)		Pre-Tax Profit or Loss Excluding All Investment Gain		Investment Gain on Funds Attributable to Insurance Transactions		Profit or Loss Excluding Investment Gain Attributable to Capital and Surplus		Investment Gain Attributable to Capital and Surplus		Total Profit or Loss	
		23 Amount	24 %	25 Amount	26 %	27 Amount	28 %	29 Amount	30 %	31 Amount	32 %	33 Amount	34 %	35 Amount	36 %	37 Amount	38 %	39 Amount	40 %	41 Amount	42 %
1.	Fire	445	17.7	81	3.2	105	4.2	190	7.6	9	0.4	(38)	(1.5)	110	4.4	72	2.9	109	4.3	181	7.2
2.1	Allied Lines	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.2	Multiple Peril Crop	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.3	Federal Flood	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3.	Farmowners Multiple Peril	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4.	Homeowners Multiple Peril	867	19.5	130	2.9	169	3.8	298	6.7	1	0.0	(1,241)	(27.9)	53	1.2	(1,188)	(26.7)	179	4.0	(1,009)	(22.7)
5.1	Commercial Multiple Peril (Non-Liability Portion)	527	17.3	85	2.8	193	6.3	347	11.4	2	0.1	528	17.4	78	2.6	607	20.0	121	4.0	728	24.0
5.2	Commercial Multiple Peril (Liability Portion)	283	17.1	45	2.7	62	3.7	110	6.6	0	0.0	(165)	(9.9)	196	11.8	31	1.9	119	7.2	150	9.1
6.	Mortgage Guaranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8.	Ocean Marine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9.	Inland Marine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10.	Financial Guaranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11.	Medical Professional Liability	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
12.	Earthquake	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
13.	Group A&H (See Interrogatory 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
14.	Credit A & H	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15.	Other A&H (See Interrogatory 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16.	Workers' Compensation	350	8.9	242	6.1	159	4.0	282	7.2	(26)	(0.7)	2,129	54.0	835	21.2	2,964	75.2	405	10.3	3,369	85.4
17.1	Other Liability - Occurrence	482	13.6	81	2.3	224	6.3	399	11.3	31	0.9	(2,500)	(70.5)	1,030	29.0	(1,470)	(41.4)	469	13.2	(1,001)	(28.2)
17.2	Other Liability - Claims-made	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
17.3	Excess Workers' Compensation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
18.	Products Liability	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
19.1,19.2	Private Passenger Auto Liability	414	15.2	71	2.6	132	4.8	235	8.6	0	0.0	(236)	(8.6)	134	4.9	(102)	(3.7)	120	4.4	18	0.6
19.3,19.4	Commercial Auto Liability	328	14.8	62	2.8	115	5.2	204	9.2	2	0.1	(191)	(8.6)	169	7.6	(22)	(1.0)	130	5.8	108	4.9
21.1	Private Passenger Auto Physical Damage	245	15.2	39	2.4	82	5.1	146	9.0	0	0.0	(176)	(10.8)	8	0.5	(168)	(10.3)	46	2.8	(121)	(7.4)
21.2	Commercial Auto Physical Damage	100	15.5	19	2.9	30	4.6	53	8.2	1	0.2	(80)	(12.4)	12	1.8	(69)	(10.6)	25	3.9	(44)	(6.8)
22.	Aircraft (all perils)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23.	Fidelity	14	9.9	5	3.5	12	8.5	21	14.9	13	9.2	(176)	(125.1)	38	26.7	(139)	(98.5)	17	12.3	(121)	(86.2)
24.	Surety	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
26.	Burglary and Theft	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
27.	Boiler and Machinery	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
28.	Credit	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
29.	International	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30.	Warranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
31, 32, 33	Reinsurance-Nonproportional Assumed	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
34.	Aggregate write-ins for Other Lines of Business	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35.	TOTALS (Lines 1 through 34)	4,055	15.3	860	3.2	1,283	4.8	2,285	8.6	33	0.1	(2,147)	(8.1)	2,663	10.0	516	1.9	1,741	6.6	2,257	8.5

PART III - ALLOCATION TO LINES OF DIRECT BUSINESS WRITTEN

PREMIUMS, LOSSES, EXPENSES, RESERVES AND PROFITS AND PERCENTAGES TO PREMIUMS EARNED FOR DIRECT BUSINESS WRITTEN (000 Omitted)

		Premiums Written (Pg. 8, Pt. 1B, Col. 1)		Premiums Earned (Sch. T, Line 59, Col. 3)		Dividends to Policyholders		Incurred Loss (Sch. T, Line 59, Col. 6)		Loss Adjustment Expense: Defense and Cost Containment Expenses Incurred		Loss Adjustment Expense: Adjusting and Other Expenses Incurred		Unpaid Losses (Sch. T, Line 59, Col. 7)		Loss Adjustment Expense: Defense and Cost Containment Expenses Unpaid		Loss Adjustment Expense: Adjusting and Other Expenses Unpaid		Unearned Premium Reserves		Agents' Balances	
		1 Amount	2 %	3 Amount	4 %	5 Amount	6 %	7 Amount	8 %	9 Amount	10 %	11 Amount	12 %	13 Amount	14 %	15 Amount	16 %	17 Amount	18 %	19 Amount	20 %	21 Amount	22 %
1.	Fire	3,254	XXX	3,275	100.0	1	0.0	1,451	44.3	52	1.6	37	1.1	1,627	49.7	103	3.1	131	4.0	1,478	45.1	385	11.8
2.1	Allied Lines	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.2	Multiple Peril Crop	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.3	Federal Flood	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3.	Farmowners Multiple Peril	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4.	Homeowners Multiple Peril	4,646	XXX	4,550	100.0	0	0.0	3,801	83.5	73	1.6	453	8.1	1,326	29.1	57	1.5	89	2.0	2,457	54.0	1,901	41.8
5.1	Commercial Multiple Peril (Non-Liability Portion)	3,243	XXX	3,264	100.0	(0)	(0.0)	1,511	46.3	83	2.5	35	1.1	3,509	107.5	93	2.8	107	3.3	1,474	45.1	606	18.6
5.2	Commercial Multiple Peril (Liability Portion)	1,760	XXX	1,771	100.0	0	0.0	765	43.2	319	18.0	12	0.7	312	17.6	1,147	64.8	260	14.7	796	45.0	447	25.2
6.	Mortgage Guaranty	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8.	Ocean Marine	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9.	Inland Marine	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10.	Financial Guaranty	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11.	Medical Professional Liability	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
12.	Earthquake	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
13.	Group A&H (See Interrogatory 1)	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
14.	Credit A & H	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15.	Other A&H (See Interrogatory 1)	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16.	Workers' Compensation	4,394	XXX	4,421	100.0	42	1.0	2,114	47.8	432	9.8	(9)	(0.2)	15,995	361.8	1,836	41.5	477	10.8	1,704	38.5	1,282	29.0
17.1	Other Liability - Occurrence	3,749	XXX	3,773	100.0	1	0.0	764	20.3	490	13.0	87	2.3	21,058	558.1	3,866	102.5	1,180	31.3	1,753	46.5	785	20.8
17.2	Other Liability - Claims-made	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
17.3	Excess Workers' Compensation	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
18.	Products Liability	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
19.1,19.2	Private Passenger Auto Liability	2,804	XXX	2,822	100.0	0	0.0	2,362	83.7	78	2.8	406	14.4	2,744	97.2	244	8.6	161	5.7	985	34.9	475	16.8
19.3,19.4	Commercial Auto Liability	2,334	XXX	2,305	100.0	1	0.0	4,222	183.2	130	5.6	302	13.1	3,409	147.9	349	15.1	156	6.8	1,052	45.6	758	32.9
21.1	Private Passenger Auto Physical Damage	1,661	XXX	1,636	100.0	0	0.0	1,112	66.3	11	0.1	198	13.7	36	2.2	15	0.1	25	1.2	560	34.3	283	17.3
21.2	Commercial Auto Physical Damage	651	XXX	641	100.0	0	0.0	436	70.6	4	2.3	78	8.4	212	33.1	6	7.9	10	3.6	289	45.0	213	33.2
22.	Aircraft (all perils)	0	XXX	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23.	Fidelity	138	XXX	139	100.0	0	0.3	(5)	(3.4)	13	9.5	1	0.8	1,047	753.2	109	78.2	4	2.9	52	37.6	37	26.6
24.	Surety	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
26.	Burglary and Theft	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
27.	Boiler and Machinery	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
28.	Credit	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
29.	International	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30.	Warranty	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
34.	Aggregate write-ins for Other Lines of Business	0	XXX	0	100.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35.	TOTALS (Lines 1 through 34)	28,634	XXX	28,597	100.0	46	0.0	18,533	64.8	1,685	5.9	1,600	5.6	51,275	179.3	7,825	27.4	2,599	9.1	12,601	44.1	7,172	25.1

PART III - ALLOCATION TO LINES OF DIRECT BUSINESS WRITTEN (Continued)

PREMIUMS, LOSSES, EXPENSES, RESERVES AND PROFITS AND PERCENTAGES TO PREMIUMS EARNED FOR DIRECT BUSINESS WRITTEN (000 Omitted)

		Commission and Brokerage Expenses Incurred		Taxes, Licenses & Fees Incurred		Other Acquisitions, Field Supervision, and Collection Expenses Incurred		General Expenses Incurred		Other Income Less Other Expenses		Pre-Tax Profit or Loss Excluding All Investment	
		23 Amount	24 %	25 Amount	26 %	27 Amount	28 %	29 Amount	30 %	31 Amount	32 %	33 Amount	34 %
1.	Fire	536	17.7	81	2.5	105	3.2	190	5.8	9	0.3	832	25.4
2.1	Allied Lines	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.2	Multiple Peril Crop	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2.3	Federal Flood	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
3.	Farmowners Multiple Peril	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
4.	Homeowners Multiple Peril	1,043	19.5	130	2.9	169	3.7	298	6.5	1	0.0	(1,416)	(31.1)
5.1	Commercial Multiple Peril (Non-Liability Portion)	634	17.3	85	2.6	193	5.9	347	10.6	2	0.1	378	11.6
5.2	Commercial Multiple Peril (Liability Portion)	341	17.1	45	2.5	62	3.5	110	6.2	0	0.0	118	6.6
6.	Mortgage Guaranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
8.	Ocean Marine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
9.	Inland Marine	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
10.	Financial Guaranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
11.	Medical Professional Liability	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
12.	Earthquake	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
13.	Group A&H (See Interrogatory 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
14.	Credit A & H	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
15.	Other A&H (See Interrogatory 1)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
16.	Workers' Compensation	421	8.9	242	5.5	159	3.6	282	6.4	(26)	(0.6)	712	16.1
17.1	Other Liability - Occurrence	580	13.6	81	2.1	224	5.9	399	10.6	31	0.8	1,177	31.2
17.2	Other Liability - Claims-made	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
17.3	Excess Workers' Compensation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
18.	Products Liability	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
19.1,19.2	Private Passenger Auto Liability	498	15.2	71	2.5	132	4.7	235	8.3	0	0.0	(960)	(34.0)
19.3,19.4	Commercial Auto Liability	395	14.8	62	2.7	115	5.0	204	8.9	2	0.1	(3,124)	(135.5)
21.1	Private Passenger Auto Physical Damage	295	15.2	39	2.4	82	5.1	146	9.0	0	0.0	(247)	(15.1)
21.2	Commercial Auto Physical Damage	120	15.5	19	2.9	30	4.6	53	8.2	1	0.2	(98)	(15.3)
22.	Aircraft (all perils)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
23.	Fidelity	17	9.9	5	3.6	12	8.6	21	15.1	13	9.4	87	62.6
24.	Surety	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
26.	Burglary and Theft	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
27.	Boiler and Machinery	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
28.	Credit	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
29.	International	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
30.	Warranty	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
34.	Aggregate write-ins for Other Lines of Business	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
35.	TOTALS (Lines 1 through 34)	4,880	17.1	860	3.0	1,283	4.5	2,285	8.0	33	0.1	(2,542)	(8.9)

2011 STATEMENT OF ACTUARIAL OPINION FOR FICTITIOUS INSURANCE COMPANY

STATEMENT OF ACTUARIAL OPINION

Fictitious Insurance Company

IDENTIFICATION

I, William H. Smith, am a Fellow of the Casualty Actuarial Society, member of the American Academy of Actuaries, and am associated with the firm of WS Actuarial Consulting. I meet the qualification standards of the American Academy of Actuaries for Statements of Actuarial Opinion for the Property and Casualty Annual Statement.

I was appointed by the Board of Directors of Fictitious Insurance Company ("the Company") on September 7, 2011, to provide this opinion for purposes of satisfying the requirements of the NAIC *Annual Statement Instructions Property/Casualty*. The intended users of this opinion are Company management, its Board of Directors and state insurance department regulators.

SCOPE

I have reviewed the December 31, 2011, loss and loss adjustment expense reserves recorded under U.S. Statutory Accounting Principles, listed in Exhibit A and included in the 2011 Statutory Annual Statement of the Company as filed with the respective state insurance departments. Those loss and loss adjustment expense reserves are the responsibility of the Company's management; my responsibility is to express an opinion on those loss and loss adjustment expense reserves based on my review.

My review of the Company's reserves included the use of such actuarial assumptions and methods and such tests of the actuarial calculations as I considered necessary in the circumstances and was conducted in accordance with standards and principles established by the Actuarial Standards Board. My review considered information provided to me through January 28, 2012.

The reserves listed in Exhibit A, where applicable, include provisions for disclosure items (disclosures 8 through 13) in Exhibit B.

In my review, I have relied on data and other relevant information, prepared by John J. Hoffman, Vice President and Controller of the Company. I evaluated that data for reasonableness and consistency. I also reconciled that data to Schedule P, Part 1 of the Company's 2011 Annual Statement.

I have not reviewed the Company's unearned premium reserves, nor have I performed any analysis to determine whether a premium deficiency reserve is needed to supplement the unearned premium reserves reported by the Company.

I have not reviewed any of the Company's assets, nor have I formed any opinion as to their validity or value; the following opinion is based on the assumption that the Company's December 31, 2011, statutory-basis reserves identified herein are funded by valid assets that have suitably scheduled maturities and/or adequate liquidity to meet cash flow requirements.

OPINION

In my opinion, the amounts carried in Exhibit A on account of the items identified:

- Make a reasonable provision for all unpaid losses and loss adjustment expenses, gross and net as to reinsurance ceded, under the terms of the Company's contracts and agreements.
- Are computed in accordance with accepted standards and principles.
- Meet the requirements of the insurance laws of Florida.

RELEVANT COMMENTS

Materiality standard

In order to establish my materiality standard, for purposes of addressing the risk of material adverse deviation of the Company's reserves for unpaid losses and loss adjustment expenses, I have considered the following amounts:

1.	10% of the Company's net loss + loss adjustment expense reserves (10% of Exhibit A, Item 1. + Item 2.) at December 31, 2011	$5,155,700
2.	20% of the Company's surplus at December 31, 2011	$6,204,800
3.	The difference between the Company's surplus at December 31, 2011, and the company action level based on the NAIC's Risk-Based Capital formula	$19,920,000

My materiality standard, for purposes of preparing the analysis in support of this Statement of Actuarial Opinion, was established at $5,155,700, which is the smallest of the foregoing amounts.

Risk of material adverse deviation

I have identified the major risk factors for this company as: mass tort claims; construction defect claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events.

In my analysis I have considered these risk factors and the implications of uncertainty in estimates of unpaid losses and loss adjustment expenses in determining my range of reasonable estimates. I also observed that the difference between the Company's carried reserves for losses and loss adjustment expenses and the higher end of my range of reasonable unpaid claim estimates is greater than my materiality standard.

In light of the materiality considerations within this analysis, and after considering the potential risks and uncertainties that could bear on the Company's reserve development, I concluded that there are significant risks and uncertainties that could result in material adverse deviation of the Company's carried reserves for unpaid losses and loss adjustment expenses as of December 31, 2011.

These risk factors are described in more detail in the following paragraphs and in the report supporting this opinion.

Mass Torts

The Company has exposure to mass tort claims such as those involving asbestos and environmental impairment liability. The Company's management has indicated that case-basis loss and allocated loss adjustment expense reserves for such claims are established as claims are reported. Additional reserves for such claims are established by the Company's management to include the potential for future development of those claims and the reporting of latent claims. Estimation of ultimate liabilities for those types of claims is unusually difficult due to such outstanding issues as whether coverage exists, definition of an occurrence, determination of ultimate damages, and allocation of such damages to financially responsible parties. The Company's net reserves for these mass tort claims totaling $3,739,000, which are included in the amounts listed in Exhibit A, are subject to greater inherent uncertainty than are estimates of the remainder of the Company's loss and loss adjustment expense liabilities.

Other losses and/or risk factors subject to greater inherent uncertainty

Additionally, at December 31, 2011, the Company has characterized construction defect claims; so-called "Chinese drywall" claims; cumulative injury losses; claims from large deductible workers' compensation policies; and claims related to catastrophic weather events, including wildfires tornadoes and hurricanes, as types of losses subject to greater inherent uncertainty than are estimates for the remainder of the Company's loss and loss adjustment expense liabilities due to pending legal interpretation, coverage disputes, length of the expected settlement pattern and high excess attachment levels. The absence of other types of losses and risk factors from this paragraph does not imply that additional factors will not be identified in the future as having contributed to significant uncertainty in the Company's estimates of unpaid losses and loss adjustment expenses.

Anticipated salvage and subrogation

The Company's management has informed me that the reserves listed in Exhibit A provide for anticipated salvage and subrogation.

Discounting

Except for tabular discount for workers' compensation and other liability, the Company's management has informed me that it does not discount its reserves for unpaid losses and loss adjustment expenses.

Pools and associations

The company does not participate in any voluntary and involuntary underwriting pools or associations.

Retroactive or financial reinsurance

I have been informed by the Company's management that it is not aware of any reinsurance contract that either has been or should have been accounted for as retroactive reinsurance or financial reinsurance.

Uncollectible reinsurance

I have been informed by the Company's management that it is not aware of any significant uncollectible reinsurance. In my review, I have requested information from management on uncollectible reinsurance, reviewed the latest available financial ratings of reinsurers by a recognized rating service and reviewed Schedule F for indications of regulatory actions or reinsurance recoverables on paid losses over 90 days past due. The majority of the Company's ceded loss reserves are with reinsurance companies rated A or better by A.M. Best Company. Past uncollectibility levels and current amounts in dispute have been reviewed and found to be immaterial relative to surplus. Therefore, reinsurance collectibility does not appear to be an issue. I express no opinion on the financial condition of the Company's reinsurers.

IRIS Ratios

I have reviewed the Company's calculations of the National Association of Insurance Commissioners' Insurance Regulatory Information System (IRIS) tests that relate to the Company's December 31, 2011, loss and loss adjustment expense reserves (Test 11, One-Year Reserve Development to Surplus; Test 12, Two-Year Reserve Development to Surplus; and Test 13, Estimated Current Reserve Deficiency to Surplus). No exceptional values were noted with respect to the Company's December 31, 2011, loss and loss adjustment expense reserve tests.

Extended reporting endorsements

According to management, the Company has no exposure to medical professional liability extended reporting endorsements, such as those relating to death, disability or retirement.

Long-duration contracts

Excluding financial guaranty contracts, mortgage guaranty policies and surety contracts, the Company's management has informed me that the Company does not write policies with coverage periods of 13 months or greater that are non-cancelable and not subject to premium increase.

* * *

An actuarial report supporting this actuarial opinion is to be provided to the Company to be retained for a period of seven years at its administrative offices and to be available for regulatory examination.

(Signature of William H. Smith)

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February 24, 2012

Exhibit A: SCOPE

Loss and Loss Adjustment Expense Reserves:		Amount
1.	Reserve for Unpaid Losses (Liabilities, Surplus and Other Funds page, Col 1, Line 1)	$41,894,000
2.	Reserve for Unpaid Loss Adjustment Expenses (Liabilities, Surplus and Other Funds page, Col 1, Line 3)	$9,663,000
3.	Reserve for Unpaid Losses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 13 and 15, Line 12 * 1000)	$51,275,000
4.	Reserve for Unpaid Loss Adjustment Expenses – Direct and Assumed (Should equal Schedule P, Part 1, Summary, Totals from Cols. 17, 19 and 21, Line 12 * 1000)	$10,424,000
5.	The Page 3 write-in item reserve, "Retroactive Reinsurance Reserve Assumed"	$0
6.	Other Loss Reserve items on which the Appointed Actuary is expressing an Opinion (list separately)	$0

Premium Reserves:		
7.	Reserve for Direct and Assumed Unearned Premiums for Long Duration Contracts	$0
8.	Reserve for Net Unearned Premiums for Long Duration Contracts	$0
9.	Other Premium Reserve items on which the Appointed Actuary is expressing an Opinion (list separately)	$0

Exhibit B: DISCLOSURES

			Last	First	Mid
1.	Name of the Appointed Actuary		Smith	William	H
2.	The Appointed Actuary's Relationship to the Company. Enter E or C based upon the following: E if an Employee of the Company or Group C if a Consultant			C	
3.	The Appointed Actuary has the following designation (indicated by the letter code):: F if a Fellow of the Casualty Actuarial Society (FCAS) A if an Associate of the Casualty Actuarial Society (ACAS) M if not a member of the Casualty Actuarial Society, but a Member of the American Academy of Actuaries (MAAA) approved by the Casualty Practice Council, as documented with the attached approval letter. O for Other			F	
4.	Type of Opinion, as identified in the OPINION paragraph. Enter R, I, E, Q, or N based upon the following: R if Reasonable I if Inadequate or Deficient Provision E if Excessive or Redundant Provision Q if Qualified. Use Q when part of the OPINION is Qualified N if No Opinion			R	
5.	Materiality Standard expressed in US dollars (Used to Answer Question #6)	$5,155,700			
6.	Are there significant risks that could result in Material Adverse Deviation?		Yes [X]	No [ ]	Not Applicable [ ]
7.	Statutory Surplus (Liabilities, Col 1, Line 37)	$31,024,000			
8.	Anticipated net salvage and subrogation included as a reduction to loss reserves as reported in Schedule P (should equal Part 1 Summary, Col 23, Line 12 * 1000)	$1,363,000			
9.	Discount included as a reduction to loss reserves and loss expense reserves as reported in Schedule P				
	9.1 Nontabular Discount [Notes, Line 32B23, (Amounts 1, 2, 3 & 4)], Electronic Filing Cols 1, 2, 3 & 4	$0			
	9.2 Tabular Discount [Notes, Line 32A23 (Amounts 1 & 2)], Electronic Filing Col 1 & 2.	$1,365,000			

10.	The net reserves for losses and expenses for the Company's share of voluntary and involuntary underwriting pools' and associations' unpaid losses and expenses that are included in reserves shown on the Liabilities, Surplus and Other Funds page, Losses and Loss Adjustment Expenses lines.	$0
11.	The net reserves for losses and loss adjustment expenses that the Company carries for the following liabilities included on the Liabilities, Surplus and Other Funds page, Losses and Loss Adjustment Expenses lines.*	
	11.1 Asbestos, as disclosed in the Notes to Financial Statements (Notes, Line 33A03D, ending net asbestos reserves for current year), Electronic Filing Col 6	$3,280,000
	11.2 Environmental, as disclosed in the Notes to Financial Statements (Notes, Line 33D03D, ending net environmental reserves for current year), Electronic Filing Col 6	$459,000
12.	The total claims made extended loss and expense reserve (Greater than or equal to Schedule P Interrogatories).	
	12.1 Amount reported as loss reserves	$0
	12.2 Amount reported as unearned premium reserves	$0
13.	Other items on which the Appointed Actuary is providing Relevant Comment (list separately)	$0

* The reserves disclosed in item 11 above, should exclude amounts relating to contracts specifically written to cover asbestos and environmental exposures. Contracts specifically written to cover these exposures include Environmental Impairment Liability (post 1986), Asbestos Abatement, Pollution Legal Liability, Contractor's Pollution Liability, Consultant's Environmental Liability, and Pollution and Remediation Legal Liability.

2011 ACTUARIAL OPINION SUMMARY FOR FICTITIOUS INSURANCE COMPANY

ACTUARIAL OPINION SUMMARY

Fictitious Insurance Company

December 31, 2011

This Actuarial Opinion Summary has been prepared in conjunction with my role as Appointed Actuary for Fictitious Insurance Company ("the Company"), and in accordance with the NAIC's Annual Statement Supplemental Filing Instructions. The information provided in this Actuarial Opinion Summary will be included in the actuarial report in support of my Statement of Actuarial Opinion, dated February 24, 2012, on the Company's statutory-basis loss and loss adjustment expense reserves at December 31, 2011. That actuarial report is to be provided to the Company to be retained for a period of seven years at its administrative offices and to be available for regulatory examination.

		Net Reserves (USD in 000s)			Gross Reserves (USD in 000s)		
		Low	Point	High	Low	Point	High
A.	Actuary's range of reserve estimates	43,000		57,000	52,000		68,000
B.	Actuary's point estimate		50,000			60,000	
C.	Company carried reserves		51,557			61,699	
D.	Difference between Company carried and Actuary's estimate (C. - A. and C. – B., if applicable)	8,557	1,557	(5,443)	9,699	1,699	(6,301)

E. The Company has not had one-year adverse development in excess of 5% of surplus in at least three of the last five calendar years, as measured by Schedule P, Part 2, Summary, and disclosed in the Five-Year Historical Data, on line 74, of the Company's December 31, 2011 statutory-basis Annual Statement.

* * *

This Actuarial Opinion Summary was prepared solely for the Company for the purpose of filing with regulatory agencies and is not intended for any other purpose. Furthermore, it is my understanding that, consistent with the Annual Statement Supplemental Filing Instructions, the information provided

in this Actuarial Opinion Summary will be held confidential by those regulatory agencies and will not be made available for public inspection.

(Signature of William H. Smith)

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March 1, 2012

RESULTS OF IRIS RATIO TESTS FOR FICTITIOUS INSURANCE COMPANY

OVERVIEW

Within this section of the Appendix, we will walk through the calculation and purpose of the 13 IRIS Ratios, provide possible explanations for unusual values, and show the results of the IRIS Ratio calculations for Fictitious Insurance Company using the 2011 Annual Statement.

IRIS Ratios are grouped into four categories:

- Overall ratios
- Profitability ratios
- Liquidity ratios
- Reserve ratios

We will present the material separately by category.

It is important to note that the calculations provided herein are based on the 2011 version of the *NAIC Insurance Regulatory Information System (IRIS) Ratios Manual*. Further, the ranges of "unusual values" are as provided in the 2011 IRIS manual. The National Association of Insurance Commissioners (NAIC) re-evaluates the reasonableness of the ranges periodically, in light of the current environment. For example, years ago the range of "usual" values for IRIS Ratio 6, *Investment Yield*, was between 5% and 10%. Compare that to the range in 2011 of 3% to 6.5%, which reflects the current economic environment. The current version of IRIS needs to be followed when analyzing data.

OVERALL RATIOS

The overall ratios focus on the insurance company's leverage, in terms of premium volume relative to surplus. There are four overall ratios:

IRIS Ratio 1: Gross premiums written to policyholders' surplus
IRIS Ratio 2: Net premiums written to policyholders' surplus
IRIS Ratio 3: Change in net premiums written
IRIS Ratio 4: Surplus aid to policyholders' surplus

IRIS Ratios 1 and 2 provide written premium-to-surplus ratios on a gross and net of reinsurance basis, respectively. The denominator is the same in each of these ratios, with the numerator differing by the amount of ceded reinsurance premium written. The source of this data can be readily found in an insurance company's Annual Statement, from either Part 1B of the Underwriting and Investment Exhibit (U&IE) *and* the balance sheet (page 3), or Five-Year Historical Data.

The purpose of IRIS Ratios 1 and 2 is to identify companies that may be taking on more business and more risk than they can handle relative to their surplus. Unusual values are

greater than or equal to 900% on a gross basis and 300% on a net basis. The 300% ratio on a net basis corresponds to the age-old generally accepted benchmark that insurers remain within the 3-to-1 range in terms of writings relative to surplus. This ratio is higher on a gross basis in consideration of reinsurance.

The following are examples of considerations that should be made when reviewing the results of these ratios:

- The difference between the gross and net IRIS Ratio results:
    - Wide disparity could signal heavy reliance on reinsurance or involvement in fronting arrangements. Further investigation on the quality, rating and collectibility of the reinsurance should be made, as well as the level of collateral held, if any. This can be accomplished through a review of the note titled, "Reinsurance" (number 23 within the Notes to Financial Statement of the 2011 Annual Statement), Schedule F, Parts 3 through 5, and research on the financial ratings of the company's reinsurers listed in Schedule F by a recognized rating service, such as A.M. Best.
    - This does not mean that a narrow difference between the gross and net IRIS Ratio results should not be investigated, as they could signal inadequate levels of reinsurance protection, in particular if the company is exposed to catastrophe risk. Part 2 of the General Interrogatories provides information on a company's protection against excessive or catastrophic loss, although further inquiry would have to be made of the company for specific details.
- The amount of the gross premiums that stem from assumed business versus business directly written by the company:
    - Companies tend to have less control over business assumed from third parties. Those companies having a large portion of assumed business and IRIS Ratio 1 results nearing the unusual value benchmark should be subject to further investigation. This would include an understanding of the type of business assumed, attachment points, layers and limits of coverage, as well as the underwriting and price monitoring controls in place on the assumed book.
- The results relative to lines of business written:
    - Lower ratio results are preferred for company's writing long-tailed lines of business due to the uncertainty inherent in the ultimate payout of associated claims.

As displayed below, IRIS Ratios 1 and 2 can be calculated for Fictitious using data from the Five-Year Historical Data exhibit.

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
	2011	2010	2009	2008	2007
6. Gross premiums written (GPW)	28,634,000	28,085,000	29,519,000	31,238,000	31,670,000
12. Net premiums written (NPW)	26,752,000	25,936,000	25,521,000	25,583,000	25,363,000
26. Surplus as regards policyholders (PHS)	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
Results of IRIS Ratios 1 and 2					
IRIS Ratio 1 (= Line 6 / Line 26)	92%	89%	82%	96%	92%
IRIS Ratio 2 (= Line 12 / Line 26)	86%	82%	71%	79%	73%

As displayed in the above table, the results of IRIS Ratio 1 for Fictitious, ranging from 82% to 96% over the period 2007 to 2011, were well within the benchmark imposed for unusual values (900%). Similarly, the results of IRIS Ratio 2, ranging from 71% to 86% over same period, were well within the 300% benchmark on a net basis.

IRIS Ratio 3 provides the change in net written premiums, current year over prior year, as a percentage of prior year net written premium. The source of this data can be readily found in an insurance company's Annual Statement, from either Part 1B of the current year and prior year U&IEs, or Five-Year Historical Data.

The purpose of IRIS Ratio 3 is to identify companies that are growing or declining rapidly so that further investigation can be made as to the cause. Unusual values are outside of the -33% to +33% range.

The following are examples of considerations that should be made when reviewing the results of IRIS Ratio 3:

- Consistent or large increases in results:
  - Growth brings uncertainty in the types of risks written and the frequency and ultimate cost of claims. In certain markets it is difficult to expand without conceding on pricing and underwriting standards. Further investigation as to the source of the company's expansion and whether the company has been able to maintain adequate pricing and terms and conditions is warranted. In addition, a review of the results of other IRIS Ratios can serve to mitigate or augment the uncertainty. For example, a mitigating factor would be a low result for IRIS Ratios 1 and 2.
- Consistent or large decreases in results:
  - A decrease in writings also requires attention. A sharp reduction in writings may be a sign of financial stress.

- Unstable results year over year:
  - This may be a sign that the company does not have good controls on its underwriting or a solid business plan and therefore raises uncertainty with respect to the viability of the company in the long-term.

We can also calculate IRIS Ratio 3 from Fictitious' Five-Year Historical Data exhibit.

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
	2011	2010	2009	2008	2007
12. Net premiums written (NPW)	26,752,000	25,936,000	25,521,000	25,583,000	25,363,000
Results of IRIS Ratio 3					
IRIS Ratio 3 (= Line 12 current less prior year) /Line 12 prior year)	3%	2%	0%	1%	

As displayed in the above table, the results of IRIS Ratio 3 for Fictitious, ranging from 0% to 3% over the period 2007 through 2011, were well within the benchmark imposed for unusual values (outside the range -33% to +33%).

IRIS Ratio 4 provides the ratio of surplus aid to policyholder surplus and is meant to identify companies that rely heavily on reinsurance as a means to enhance surplus. Insurance companies receive a ceding commission from their reinsurers for placing business with those reinsurers. Under statutory accounting, the treatment of ceding commissions is similar to the way that an insurance company treats policy acquisition costs, the "signs" are just different. While acquisition expenses are a direct charge to income and surplus as they are incurred, ceding commissions are recognized as a credit to income and surplus when they are incurred. Surplus aid represents the amount of enhancement to surplus in the current period as a result of ceding commission that has been taken into income on its ceded unearned premium. Formulaically,

Surplus aid =

Estimated reinsurance commission rate
* Unearned premium on reinsurance ceded to non-affiliates

where,

Estimated reinsurance commission rate =

Ceding commissions from reinsurance, including contingent commissions
÷ Total written premiums ceded to reinsurers (affiliates and non-affiliates).

Ceding commissions from reinsurance for the current year are found in Part 3, Expenses of the U&IE of the Annual Statement, column 2 (other underwriting expenses), line 2.3 (reinsurance ceded, excluding contingent) plus line 2.6 (contingent – reinsurance ceded).

Total written premiums ceded to reinsurers is found in Part 1B, Premiums Written of the U&IE of the Annual Statement, column 4 (reinsurance ceded to affiliates) plus column 5 (reinsurance ceded to non-affiliates) totals.

Unearned premium on reinsurance ceded to non-affiliates is found in Schedule F, Part 3, reinsurance ceded of the Annual Statement, column 13 totals for the following three categories of unaffiliated reinsurers:

1. Authorized and unauthorized other U.S. unaffiliated insurers
2. Authorized and unauthorized mandatory and voluntary pools
3. Authorized and unauthorized other non-U.S. insurers

IRIS Ratio 4 is the ratio of surplus aid, as calculated above, to policyholders' surplus.

Unusual values are greater than or equal to 15%, and may be a sign that policyholders' surplus is inadequate. Therefore, when IRIS Ratio 4 produces values greater than 15%, certain other IRIS Ratio tests dependent upon policyholders' surplus are recalculated to remove surplus aid. These are:

IRIS Ratio 1: Gross premiums written to policyholders' surplus
IRIS Ratio 2: Net premiums written to policyholders' surplus
IRIS Ratio 7: Gross change in policyholders' surplus
IRIS Ratio 10: Gross agents' balances (in collection) to policyholders' surplus
IRIS Ratio 13: Estimated current reserve deficiency to policyholders' surplus

Further, when IRIS Ratio 4 produced unusual values, the company's reinsurance treaties should be evaluated to assess the impact that cancellation could have solvency.

The following provides the calculation of IRIS Ratio 4 for Fictitious.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)			
		2011	Source
(1)	Surplus Aid	403,172	= (2) * (9) * 1000
(2)	Estimated reinsurance commission rate	44%	= (3) / (6)
(3)	Total ceding commissions from reinsurance	825,000	= (4) + (5)
(4)	Reinsurance ceded, excluding contingent	816,000	Underwriting & Investment Exhibit, Part 3, Column 2, Line 2, 3
(5)	Ceding Commission from reinsurance	9,000	Underwriting & Investment Exhibit, Part 3, Column 2, Line 2, 6
(6)	Total written premiums ceded to reinsurers	1,882,000	= (7) + (8); = Five Year Historical Data GPW minus NPW
(7)	Reinsurance ceded to affiliates	0	Underwriting & Investment Exhibit, Part 1B, Column 4, Total
(8)	Reinsurance ceded to non-affiliates	1,882,000	Underwriting & Investment Exhibit, Part 1B, Column 5, Total
(9)	Unearned premium on reinsurance ceded to non-affiliates	920	= Sum of (10) through (17)
(10)	Authorized Other U.S. Unaffiliated Insurers	626	Schedule F, Part 3, Column 13, Total (000 omitted)
(11)	Authorized Mandatory Pools		Schedule F, Part 3, Column 13, Total (000 omitted)
(12)	Authorized Voluntary Pools	50	Schedule F, Part 3, Column 13, Total (000 omitted)
(13)	Authorized Other Non-U.S. Insurers	201	Schedule F, Part 3, Column 13, Total (000 omitted)
(14)	Unauthorized Other U.S. Unaffiliated Insurers	28	Schedule F, Part 3, Column 13, Total (000 omitted)
(15)	Unauthorized Mandatory Pools		Schedule F, Part 3, Column 13, Total (000 omitted)
(16)	Unauthorized Voluntary Pools		Schedule F, Part 3, Column 13, Total (000 omitted)
(17)	Unauthorized Other Non-U.S. Insurers	15	Schedule F, Part 3, Column 13, Total (000 omitted)
(18)	Surplus as regards policyholders (PHS)	31,024,000	Page 3, Line 37, Column 1
Results of IRIS Ratio 4			
IRIS Ratio 4		1.30%	= (1) / (18)

As displayed in the above table, the result of IRIS Ratio 4 of 1.30% for Fictitious was well within the benchmark imposed for unusual values (greater than or equal to 15%).

PROFITABILITY RATIOS

The profitability ratios focus on the insurance company's profitability from an operations, investment and surplus perspective. There are four profitability ratios:

IRIS Ratio 5: Two-year overall operating ratio
IRIS Ratio 6: Investment yield
IRIS Ratio 7: Gross change in policyholders' surplus
IRIS Ratio 8: Change in adjusted policyholders' surplus

IRIS Ratio 5 essentially provides a company's combined ratio over a two-year period, offset for investment income earned over that period. In IRIS Ratio 5, the combined ratio is calculated as loss and loss adjustment expense (LAE) incurred plus policyholder dividends

incurred, divided by earned premium, plus other underwriting expenses less other income, divided by written premium. The investment income ratio is calculated as the ratio of investment income earned divided by earned premium.

Two-year operating ratio =

Two-year combined ratio – Two-year investment income ratio

where,

Combined ratio =

$$\frac{\text{Net loss and LAE + Dividends to policyholders incurred}}{\text{Net earned premium}} + \frac{\text{Other underwriting expenses – Other income incurred}}{\text{Net written premium}}$$

Investment income ratio =

$$\frac{\text{Investment income earned}}{\text{Net earned premium}}.$$

The source of this data can be readily found in an insurance company's Annual Statement, from the Statement of Income and Part 1B of the U&IE.

The purpose of IRIS Ratio 5 is to identify companies that are operating unprofitably. A two-year period is used in the calculation to smooth unusual fluctuations due to a "bad" loss or investment year. Unusual values are greater than or equal to 100%, meaning that the company is operating at an underwriting loss, even after consideration of investment income.

When reviewing the result of this ratio, consideration should be made for the cause by looking at each of the components of the calculation. During the financial crisis, companies experienced a significant decline in investment income and therefore did not achieve as much of a benefit in the offset afforded in the calculation. Further, adverse development on prior accident years will have an impact on the combined ratio, but such development may not be reflective of profitability on the company's current operations or current reserving.

IRIS Ratio 5 is calculated for Fictitious in the following table.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)					
		2011 (Current Year)	2010 (Prior Year)	Sum over 2-Year	Source
(1)	Combined Ratio	108%	94%	101%	= (2) + (8)
(2)	Loss Ratio	76%	62%	69%	= (3) / (7)
(3)	Loss & LAE plus Dividends to Policyholders incurred	20,208,000	15,838,000	36,046,000	= (4) + (5) + (6)
(4)	Losses incurred	16,907,000	12,798,000	29,705,000	Statement of Income, Line 2, Columns 1 and 2, respectively
(5)	Loss Adjustment Expenses (LAE) incurred	3,255,000	3,008,000	6,263,000	Statement of Income, Line 3, Columns 1 and 2, respectively
(6)	Dividends to policyholders	46,000	32,000	78,000	Statement of Income, Line 17, Columns 1 and 2, respectively
(7)	Net premiums earned	26,512,000	25,535,000	52,047,000	Statement of Income, Line 1, Columns 1 and 2, respectively
(8)	Expense Ratio	32%	32%	32%	= (9) / (13)
(9)	Expenses Incurred	8,450,000	8,194,000	16,664,000	= (10) + (11) - (12)
(10)	Other underwriting expenses	8,483,000	8,240,000	16,723,000	Statement of Income, Line 4, Columns 1 and 2, respectively
(11)	Aggregate write-ins for underwriting deductions	-	1,000	1,000	Statement of Income, Line 5, Columns 1 and 2, respectively
(12)	Total other income	33,000	47,000	80,000	Statement of Income, Line 15, Columns 1 and 2, respectively
(13)	Net premiums written	26,752,000	25,936,000	52,688,000	Underwriting & Investment Exhibit, Part 1B, Column 6, Total*
(14)	Investment Income Ratio	16%	19%	18%	= (15) / (16)
(15)	Investment income earned	4,290,000	4,860,000	9,150,000	Statement of Income, Line 9, Columns 1 and 2, respectively
(16)	Net premiums earned	26,512,000	25,535,000	52,047,000	Statement of Income, Line 1, Columns 1 and 2, respectively
Results of IRIS Ratio 5					
IRIS Ratio 5				84%	= (1) - (14) for two-year period

**Also provided in Five-Year Historical Data*

As displayed above, the result of IRIS Ratio 5 for Fictitious of 84% was well within the 100% benchmark imposed for unusual values.

IRIS Ratio 6 provides the yield in the company's investment portfolio over the past year. IRIS Ratio 6 is calculated as net investment income earned during the year divided by the average of cash plus invested assets over the current and prior year. The source of this data can be readily found in an insurance company's Annual Statement, from the balance sheet and Statement of Income.

The purpose of IRIS Ratio 6 is to identify companies earning unusually low or high yields, potentially indicating a risky, inefficient or expensive investment strategy. Unusual values are

outside of the 3.0% to +6.5% range. That is, it is expected that companies will achieve a 3.0% to 6.5% yield on their invested assets during the year. The NAIC can change the range of usual (or unusual) values over time, in consideration of the financial markets.

When reviewing the result of this ratio, consideration should be made for the cause by looking at each of the components of the calculation, and further investigation into the types of investment should be made.

The following provides the calculation of IRIS Ratio 6 for Fictitious.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)				
	2011 (Current Year)	2010 (Prior Year	Sum over 2-Year	Source
(1) Net investment income earned	4,290,000			Statement of Income, Line 9, Column 1
(2) Cash and invested assets	88,551,000	88,534,000	88,542,500	= (3) + (4) - (5); Average over two-year
(3) Total cash and investment assets	87,825,000	87,784,000		Page 2, Line 12, Columns 3 and 4, respectively
(4) Investment income due and accrued	726,000	750,000		Page 2, Line 14, Columns 3 and 4, respectively
(5) Borrowed money	-	-		Page 3, Line 8, Columns 1 and 2, respectively
Results of IRIS Ratio 6				
IRIS Ratio 6			5.0%	= 2 * (1) current year /[(2) for two-year period – (1) current year]

As displayed in the above table, the result of IRIS Ratio 6 for Fictitious of 5.0% was right around the midpoint of the expected benchmarks of 3.0% to 6.5% for usual values. This means that the company earned a return on its invested assets within what would be considered the "norm" for companies in 2011.

IRIS Ratio 7 is what the NAIC calls "the ultimate measure of improvement or deterioration in the insurer's financial condition during the year."[1] It provides the change in policyholder surplus, current year over prior year, as a percentage of prior year surplus, with the surplus figures coming directly from the company's balance sheet. We note that historical surplus figures are also provided in the Five-Year Historical Data of the company's Annual Statement.

Unusual values are outside of the -10% to +50% range. That is, a decrease in a company's surplus by 10% or more, or an increase by 50% or more, is considered a signal for the analyst

[1] NAIC, *Insurance Regulatory Information System (IRIS) Ratios Manual*, 2009, page 19.

to perform further inquiry and investigation. The NAIC recognizes that 10% is conservative; however, decreases in policyholder surplus are of course a greater concern than increases. Increases in surplus of 50% or more are very unusual for a stable company absent an acquisition or redistribution of capital amongst affiliates and therefore would be a sign of financial instability. According to the NAIC, "a number of insolvent insurers reported dramatic increases in policyholders' surplus prior to insolvency."[2]

Using the Five-Year Historical Data exhibit, we can calculate the result of IRIS Ratio 7 over the past four years.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)					
	2011	2010	2009	2008	2007
26. Surplus as regards policyholders (PHS)	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
Results of IRIS Ratios 7					
IRIS Ratio 7 (= Line 26 current less prior year / Line 26 prior year)	-1.8%	-11.7%	9.9%	-5.8%	

As displayed in the above table, the result of IRIS Ratio 7 for Fictitious exceeded did breach the -10% mark for unusual values in 2010 at -12%.

IRIS Ratio 8 is similar to IRIS Ratio 7, with the exception that current-year policyholders' surplus is adjusted to remove changes in surplus notes, capital paid-in or transferred, and surplus paid-in or transferred. Removal of these items provides a picture of the improvement or deterioration in financial results due to operations. The source of the data used in the calculation of IRIS Ratio 8 is the balance sheet and Statement of Income of the company's Annual Statement.

Unusual values are outside of the -10% to +25% range. That is, a decrease in a company's surplus resulting from operations by 10% or more, or an increase by 25% or more, is considered a signal for the analyst to perform further inquiry and investigation. The lower bound benchmark is the same as in Ratio 7; however, the upper bound of +25% is lower, reflecting the expectation that operations would not typically cause an increase in surplus by more than 25%.

The calculation of IRIS Ratio 8 is shown below for Fictitious.

[2] Ibid.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)			
	2011 (Current Year)	2010 (Prior Year)	Source
(1) Adjusted policyholders' surplus	(584,000)	(4,546,000)	= (2) - (3) - (4) – (8) – (12)
(2) Policyholders' surplus	31,024,000	31,608,000	Statement of Income, Line 39, Columns 1 and 2, respectively
(3) Change in surplus notes	-	-	Statement of Income, Line 29, Columns 1 and 2, respectively
(4) Capital paid-in or transferred	-	-	= (5) + (6) + (7)
(5) Paid in	-	-	Statement of Income, Line 32.1, Columns 1 and 2, respectively
(6) Transferred from surplus (Stock Dividend)	-	-	Statement of Income, Line 32.2, Columns 1 and 2, respectively
(7) Transferred to surplus	-	-	Statement of Income, Line 32.3, Columns 1 and 2, respectively
(8) Surplus paid-in or transferred	-	361,000	= (9) + (10) + (11)
(9) Paid in	-	361,000	Statement of Income, Line 33.1, Columns 1 and 2, respectively
(10) Transferred to capital (Stock Dividend)	-	-	Statement of Income, Line 33.2, Columns 1 and 2, respectively
(11) Transferred from capital	-	-	Statement of Income, Line 33.3, Columns 1 and 2, respectively
(12) Policyholders' surplus prior year	31,608,000	35,793,000	Statement of Income, Line 21, Columns 1 and 2, respectively
Results of IRIS Ratio 8			
IRIS Ratio 8	-2%	-13%	= (1) / (12)

As displayed in the above table, the result of IRIS Ratio 8 for Fictitious did breach the -10% mark for unusual values in 2010 at -13%. This is consistent with the finding from IRIS Ratio 7; however, it shows that the surplus enhancement during 2010 of $361,000 helped to cushion the impact of the change in surplus observed in IRIS Ratio 7.

This ratio is telling us that the unusual value in 2010 is attributed to the company's operations. However, going back and reviewing the components of IRIS Ratio 5, we see that the company's combined ratio for 2010 was 94%, indicating that the company was operating at a profit from its underwriting results. Further, the investment income ratio in 2010 was 19%, which was higher than in 2011. So the decrease in the company's surplus was not a result of the company's income; net income earned in 2010 was positive, at $4.955 million (see page 4, line 20, column 2). We therefore need to look to the capital and surplus account within the Statement of Income for the reason.

Within column 2 of the capital and surplus account, we see the biggest decrease in surplus came from dividends to stockholders totaling $10.023 million in 2010. This was more than

$7 million higher than dividends made in 2011 and was the reason for the decrease in surplus greater than 10%. Further investigation would determine why the company made such a large dividend payment in 2010 and whether regulatory approvals were required and obtained.

LIQUIDITY RATIOS

The liquidity ratios focus on the amount of liquid assets that the insurance company has to cover its obligations. There are two liquidity ratios:

IRIS Ratio 9: Adjusted liabilities to liquid assets
IRIS Ratio 10: Gross agents' balances (in collection) to policyholders' surplus

IRIS Ratio 9 provides an indication of the company's ability to pay its financial obligations out of assets that are readily convertible into acceptable forms of payment (i.e., cash). In this calculation, an insurance company's liabilities are adjusted to remove deferred agents' balances, as these balances are not liquid assets. Liquid assets include the following:

- Bonds, excluding affiliates
- Stocks, excluding affiliates
- Cash, cash equivalents and short-term investments, excluding affiliates
- Receivable for securities
- Investment income due and accrued

Unusual values are those in 100% or greater, suggesting that the company would not be able to pay its liabilities with current liquid assets as defined above.

The primary source of this information is the balance sheet, with investments in parent, subsidiaries and affiliates coming from Five-Year Historical Data, lines 42 through 45 in the 2011 Annual Statement.

The following provides the calculation of IRIS Ratio 9 for Fictitious.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)			
	2011 (Current Year)	2010 (Prior Year)	Source
(1) Adjusted Liabilities	63,862,000	63,141,000	= (2) - (3)
(2) Total liabilities	68,976,000	68,068,000	Page 3, Line 28, Columns 1 and 2, respectively
(3) Deferred agent's balances	5,114,000	4,927,000	Page 2, Line 15.2, Columns 3 and 4, respectively
(4) Liquid assets	79,759,000	79,960,000	= (5) + (6) + (9) + (10) + (11) – (12)
(5) Bonds	58,676,000	58,861,000	Page 2, Line 1, Columns 3 and 4, respectively
(6) Stocks	19,374,000	19,116,000	= (7) + (8)
(7) Preferred stocks	34,000	35,000	Page 2, Line 2.1, Columns 3 and 4, respectively
(8) Common stocks	19,340,000	19,081,000	Page 2, Line 2.2, Columns 3 and 4, respectively
(9) Cash, cash equivalents and short-term investments	983,000	1,233,000	Page 2, Line 5, Columns 3 and 4, respectively
(10) Receivables for securities	–	–	Page 2, Line 9, Columns 3 and 4, respectively
(11) Investment income due and accrued	726,000	750,000	Page 2, Line 14, Columns 3 and 4, respectively
(12) Investments in parent, subsidiary and affiliates	–	–	= (13) + (14) + (15) + (16)
(13) Affiliated bonds	–	–	Five-Year Historical Data, Line 42, Columns 1 and 2, respectively
(14) Affiliated preferred stocks	-	-	Five-Year Historical Data, Line 43, Columns 1 and 2, respectively
(15) Affiliated common stocks	–	–	Five-Year Historical Data, Line 44, Columns 1 and 2, respectively
(16) Affiliated short-term investments	–	–	Five-Year Historical Data, Line 45, Columns 1 and 2, respectively
Results of IRIS Ratio 9			
IRIS Ratio 9	80%	79%	= (1) / (4)

As displayed above, the result of IRIS Ratio 9 for Fictitious Insurance Company was 80% in 2011, about 20 points below the 100% benchmark for unusual values. This ratio was consistent with that in 2010 of 79%.

IRIS Ratio 10 provides the ratio of agents' balances in the course of collection to policyholders' surplus. The purpose is to show how dependent a company's surplus is to assets that may not be collectible upon liquidation or are of questionable liquidity.

The source of the data is the balance sheet of the company's Annual Statement. Unusual values are greater than or equal to 40% of surplus.

The following provides the calculation of IRIS Ratio 10 for the current and prior year for Fictitious.

Data from Fictitious Insurance Company 2011 Annual Statement (USD)			
	2011 (Current Year)	2010 (Prior Year)	Source
(1) Uncollected premiums and agent's balances in course of collection	2,626,000	2,866,000	Page 2, Line 15.1, Columns 3 and 4, respectively
(2) Policyholders' surplus	31,024,000	31,608,000	Page 3, Line 37, Columns 1 and 2, respectively
Results of IRIS Ratio 10			
IRIS Ratio 10	8%	9%	= (1) / (2)

As displayed above, the result of IRIS Ratio 10 for Fictitious was 8% in 2011, which was well below the 40% threshold for unusual values. This was consistent with the result in 2010 of 9%.

RESERVE RATIOS

The reserve ratios focus on the development of an insurance company's net loss and LAE reserves for purposes of understanding reserve adequacy. These are probably the most important ratios to the property/casualty actuary and where the actuary places most attention, as these ratios are specifically commented on by the appointed actuary in the SAO.

There are three reserve ratios:

IRIS Ratio 11: One-year reserve development to policyholders' surplus
IRIS Ratio 12: Two-year reserve development to policyholders' surplus
IRIS Ratio 13: Estimated current reserve deficiency to policyholders' surplus

IRIS Ratio 11 is the same one-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement (line 74 in the 2011 Annual Statement). It measures development in the company's net loss and LAE reserves over the past year, whether adverse or favorable, relative to prior year surplus. Essentially, this test looks to see how much surplus would have been absorbed or enhanced in the prior year as a result of adverse or favorable development in the corresponding net loss and LAE reserves. Adverse development is shown as an increase to reserves and therefore a positive number. Results of IRIS Ratio 11 equal to or greater than 20% are considered unusual.

The following table provides the calculation of IRIS Ratio 11 for Fictitious over the period 2008 through 2011.

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
	2011	2010	2009	2008	2007
73. Development in estimated losses and loss expenses incurred prior to current year (Schedule P, Part 2, Summary, Line 12, Col. 11; *in 000s*	(875)	(1,354)	(1,618)	(1,935)	(918)
74. Percent of development of losses and loss expenses incurred to policyholders' surplus of prior year end (line 73 divided by Page 4, Line 21, Col. 1 x 100)	(2.8)	(3.8)	(5.0)	(5.6)	(2.6)
26. Surplus as regards policyholders (PHS)	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
Results of IRIS Ratios 11					
IRIS Ratio 11 (= Line 74 above; = Line 73 / Line 26 prior * 1000)	-2.8%	-3.8%	-5.0%	-5.7%	

As displayed in the above table, Fictitious' loss and LAE net reserves developed favorably over the period 2007 through 2011. As a result, IRIS Ratio 11 has historically been negative, ranging from -3% to -6%, and therefore well below the benchmark imposed for unusual values (greater than or equal to +20%).

The trigger of an "unusual" value is a current year ratio greater than or equal to 20%. This will capture reserve deficiencies in the immediate prior year. In addition to this warning, the AOS serves to notify regulators of any trends whereby development in three of the prior five years exceeds 5%. The AOS has a lower threshold than IRIS 11, as it serves to identify those companies that consistently underestimate their loss and LAE reserves.

IRIS Ratio 12 is the same two-year development test as provided in the Five-Year Historical Data exhibit within the Annual Statement (line 76 of the 2011 Annual Statement). It measures development in the company's net loss and LAE reserves over the past two years, relative to surplus at the end of the second prior year. Similar to Ratio 11, results of test 12 equal to or greater than 20% are considered unusual.

The following table provides the calculation of IRIS Ratio 12 for Fictitious over the period 2009 through 2011.

Data from Fictitious Insurance Company 2011 Five-Year Historical Data (USD)					
	2011	2010	2009	2008	2007
75. Development in estimated losses and loss expenses incurred 2 years before the current year and prior year (Schedule P, Part 2, Summary, Line 12, Col. 12); *in 000s*	(2,602)	(2,906)	(3,680)	(2,544)	(1,059)
76. Percent of development of losses and loss expenses incurred to policyholders' surplus of second prior year end (Line 75 divided by Page 4, Line 21, Col. 2 x 100)	(7.3)	(8.9)	(10.6)	(7.3)	(3.0)
26. Surplus as regards policyholders (PHS)	31,024,000	31,608,000	35,793,000	32,572,000	34,567,000
Results of IRIS Ratios 12					
IRIS Ratio 12 (= Line 76 above; = Line 75 / Line 26 2nd prior * 1000)	-7.3%	-8.9%	-10.6%		

As displayed in the above table, Fictitious' IRIS Ratio 12 results have historically been negative, ranging from -7% to -10%, and therefore well below the benchmark imposed for unusual values (+20%).

IRIS Ratio 13 is a hindsight test. It looks at a company's net outstanding loss and LAE reserves at the immediate prior two years relative to calendar year earned premium for those years and adds to the reserves development that has emerged over that period (one-year development for the immediate prior year; two-year development for the year prior to that). The test then applies the average of the resulting two "adjusted" loss ratios to earned premium for the recent year (2011) to determine what the outstanding loss reserve should be for that year (2011). A calculated deficiency in recorded loss and LAE reserves of 25% or more is deemed to be unusual.

The purpose of this test is to identify companies that may not have gotten their reserves "right" in the past. The expectation inherent in this test is if companies have had adverse development in the past, they will probably have adverse development in the future. Regulators want to see if companies who have had such adverse development have corrected for it in their current estimates.

The following are examples of considerations that should be made when reviewing the results of IRIS Ratio 13:

- The losses and premiums are not matched in Ratio 13; the numerator is unpaid loss and LAE for all accident years, whereas the denominator is earned premium for the current accident year.

- This mismatch obstructs the usefulness of the ratio because growth or decline in premium volume, or changes in the mix of business between short- and long-tailed lines, will distort the "outstanding" loss ratio.

- Similarly, because it is strictly a quantitative test, IRIS Ratio 13 cannot take into account qualitative factors that may mitigate adverse development in the future on current reserves, such as change in mix of business.

  - A good example is a company that had observed adverse development on its CAL line in the prior two years but significantly changed their product mix in the current year to be more heavily weighted toward short-tailed homeowners business. As a result of this change in mix, such adverse development would not be expected in the future.

IRIS Ratio 13 requires use of the prior year Annual Statement. While we have not included the 2010 Annual Statement for Fictitious, we have included the required values in the following table to calculate the result of IRIS Ratio 13 for 2011.

	2009	2010	2011		Source
One-Year Development			(875)	(1)	Schedule P, Part 2, Line 12, Column 11; Five-Year Historical Data, Line 73
Two-Year Development			(2,602)	(2)	Schedule P, Part 2, Line 12, Column 12; Five-Year Historical Data, Line 75
Earned Premium	25,618	25,535	26,512	(3)	Stmt of Income, Line 1, divided by 1,000
Loss Reserves	41,643	40,933	41,894	(4)	Page 3, Line 1, divided by 1,000
Reinsurance Payable on Paid Losses	-	-	-	(5)	Page 3, Line 2, divided by 1,000
LAE Reserves	9,955	9,664	9,663	(6)	Page 3, Line 3, divided by 1,000
Policyholder Surplus	35,793	31,608	31,024	(7)	Page 3, Line 37, divided by 1,000
Result of IRIS Ratio 13	**2009**	**2010**	**2011**		**Source**
IRIS Ratio 13					
Outstanding Loss Ratios	201%	198%	194%	(8)	Sum of (4) thru (6), divided by (3)
Restated Loss and LAE Reserves	48,995	49,722		(9)	Sum of (4) thru (6), + (1) for 2010 or + (2) for 2009
Restated Outstanding Loss Ratios	191%	195%		(10)	= (9) divided by (3)
Average Outstanding Loss Ratio			193%	(11)	= average of row (10)
Implied Loss and LAE Reserves			51,165	(12)	= (11) * (3)
Actual Loss and LAE Reserves			51,557	(13)	Sum of (4) through (6)
Deficiency/(Redundancy)			(392)	(14)	= (12) - (13)
Ratio of Def/(Red to PHS)			-1%	(15)	= (14) divided by (7)

As displayed in the above table, Fictitious' IRIS Ratio 13 result was -1% for 2011, which was well below the benchmark imposed for unusual values (greater than or equal to 25%).

APPENDIX II. CANADIAN FINANCIAL STATEMENTS

2011 BALANCE SHEET FOR ALL PROPERTY/CASUALTY INSURANCE COMPANIES

Total Canadian Property and Casualty Companies

CONSOLIDATED ASSETS

As At Q4 - 2011

(in thousands of dollars)

Cash and Cash Equivalents	$	2,222,025
Investment Income Due and Accrued		409,599
Assets held for sale		42,846
Investments:		
Short Term Investments		1,352,378
Bonds and Debentures		48,098,853
Mortgage Loans		373,410
Preferred Shares		3,236,951
Common Shares		6,728,144
Investment Properties		16,887
Other Investments		1,605,832
Total Investments	$	61,412,454
Receivables:		
Unaffiliated Agents and Brokers		1,348,157
Policyholders		159,707
Instalment Premiums		6,577,574
Other Insurers		374,417
Facility Association and the "P.R.R."		248,471
Subsidiaries, Associates & Joint Ventures		174,842
Income Taxes		5,749
Other Receivables		278,668
Recoverable from Reinsurers:		
Unearned Premiums		1,208,257
Unpaid Claims and Adjustment Expenses		7,592,262
Other Recoverables on Unpaid Claims		730,809
Interests in Subsidiaries, Associates & Joint Ventures		1,634,236
Property and Equipment		213,884
Deferred Policy Acquisition Expenses		2,965,054
Current Tax Assets		249,511
Deferred Tax Assets		653,933
Goodwill		574,129
Intangible Assets		1,105,556
Other Assets		434,693
Total Assets	$	90,616,835

Total Canadian Property and Casualty Companies

CONSOLIDATED LIABILITIES AND EQUITY

As At Q4 - 2011

(in thousands of dollars)

Liabilities		
Overdrafts	$	295,220
Borrowed Money and Accrued Interest		24,036
Payables:		
Agents and Brokers		583,950
Policyholders		62,516
Other Insurers		249,867
Subsidiaries, Associates & Joint Ventures		356,319
Expenses Due and Accrued		1,014,488
Income Taxes Due and Accrued		616
Other Taxes Due and Accrued		395,194
Policyholder Dividends and Rating Adjustments		29,365
Encumbrances on Real Estate		-
Unearned Premiums		17,528,620
Unpaid Claims and Adjustment Expenses		41,294,310
Unearned Commissions		220,308
Premium Deficiency		1,157
Liabilities Held for Sale		[illegible]
Current Tax Liabilities		72,251
Deferred Tax Liabilities		378,790
Provisions and Other Liabilities		2,081,584
Total Liabilities	$	64,588,591
Equity		
Share Capital Issued and Paid		9,861,584
Contributed Surplus		1,143,947
Other		17,966
Retained Earnings		13,191,336
Reserves		347,349
Accumulated Other Comprehensive Income (Loss)		1,466,061
Non-controlling Interests		-
Total Equity	$	26,028,243
Total Liabilities and Equity	$	90,616,835

2011 INCOME STATEMENT FOR ALL PROPERTY/CASUALTY INSURANCE COMPANIES

Total Canadian P&C

CONSOLIDATED STATEMENT OF INCOME

Year to date: End of Q4 - 2011

(in thousands of dollars)

Underwriting Operations		
Premiums Written		
Direct	$	29,853,183
Reinsurance Assumed		2,417,428
Reinsurance Ceded		4,462,442
Net Premiums Written	$	27,808,170
Decrease (Increase) in Unearned Premiums		(597,361)
Net Premiums Earned	$	27,210,809
Service Charges		132,409
Other		(14,188)
Total Underwriting Revenue	$	27,329,030
Gross Claims and Adjustment Expenses		21,145,947
Reinsurers' Share of Claims and Adjustment Expenses		2,726,019
Net Claims and Adjustment Expenses		18,419,928
Acquisition Expenses		
Gross Commissions		5,064,602
Ceded Commissions		812,096
Taxes		946,630
Other		1,219,479
General Expenses		1,977,176
Total Claims and Expenses	$	26,815,719
Premium Deficiency Adjustments		266
Underwriting Income (Loss)	$	513,045
Investment Operations		
Income		1,930,901
Realized Gains (Losses)		836,280
Expenses		100,221
Net Investment Income	$	2,666,961
Other Revenue and Expenses		
Income (Loss) from Ancillary Operations net of Expenses		(1,519)
Share of Net Income (Loss) of Subsidiaries, Associates & Joint Ventures		72,267
Gains (Losses) from Fluctuations in Foreign Exchange Rates		9,211
Other Revenues		739,677
Finance Costs		25,513
Other Expenses		113,076
Net Income (Loss) before Income Taxes	$	3,861,053
Income Taxes		
Current		783,295
Deferred		11,767
Total Income Taxes	$	795,062
Extraordinary Items net of Income Taxes		-
Net Income (Loss) for the Year	$	3,065,991
Attributable to:		
Non-controlling Interests		-
Equity Holders	$	3,065,991

Guideline

Subject: **Corporate Governance**

Category: **Sound Business and Financial Practices**

Date: **September 2018**

I. Purpose and Scope of the Guideline

This guideline communicates OSFI's expectations with respect to corporate governance of federally regulated financial institutions (FRFIs). It applies to all FRFIs other than the branch operations of foreign banks and foreign insurance companies.[1]

OSFI's corporate governance expectations are principles-based and recognize that a FRFI's corporate governance practices may depend on its size; ownership structure; nature, scope and complexity of operations; strategy; and risk profile.

This guideline complements:

- Relevant provisions of the *Bank Act*, the *Insurance Companies Act*, the *Trust and Loan Companies Act*, the *Cooperative Credit Associations Act* and associated regulations; and,
- OSFI's *Supervisory Framework* and *Assessment Criteria*.[2]

Corporate Governance for Financial Institutions

Corporate governance is a set of relationships between a company's management, its Board of Directors (Board), its shareholders, and other stakeholders. It also provides the structure through which the objectives of the company are set, and through which the means of attaining those objectives and monitoring performance are determined.

[1] Branches do not have a Board of Directors and, accordingly, this guideline does not apply to branch operations. OSFI looks to the Chief Agent or Principal Officer of a branch to oversee the management of the branch, including matters of corporate governance. The Chief Agent and/or Principal Officer of branches should refer to Guideline E-4A and Guideline E-4B, as appropriate.

[2] The terms "Senior Management" and "Operational Management" are used throughout this guideline, and are defined in OSFI's Supervisory Framework. For the purpose of this guideline, however, the Oversight Functions include: Financial; Risk Management; Compliance; Internal Audit; and Actuarial.

The quality of FRFI corporate governance practices is an important factor in maintaining the confidence of depositors and policyholders, as well as overall market confidence. This guideline, therefore, draws attention to specific areas of corporate governance that are especially important for financial institutions (e.g., risk governance), owing to the unique nature and circumstances of financial institutions and risks assumed relative to other corporations.[3]

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[3] Refer to **Annex A** for a description of the special nature of financial institutions.

II. The Board of Directors

1. ***The Board is responsible for the FRFI's business plan, strategy, and risk appetite and culture. The Board oversees the FRFI's Senior Management and internal controls.***

The Role of the Board

In addition to the roles and responsibilities of the Board outlined in federal legislation, the Board should discharge, at a minimum, the following essential duties in relation to the FRFI:

1. Approve and oversee:

Strategy

- Short-term and long-term business plan and strategy;
- Significant strategic initiatives (e.g., mergers and acquisitions);

Risk Management and Oversight

- Risk Appetite Framework;[4]
- Internal Control Framework;
- Significant policies, plans and strategic initiatives related to the management of, or that materially impact, capital and liquidity (e.g., internal capital targets, share issuance);
- Codes of ethics and conduct;

Board, Senior Management and Oversight Functions

- Appointment, performance review, and compensation of the CEO and other key members of Senior Management, including the heads of the Oversight Functions;
- Succession plans with respect to the Board, CEO and other key members of Senior Management, including the heads of the Oversight Functions;
- Mandate, resources and budgets for the Oversight Functions;

Audit Plans

- External audit plan, including audit fees and the scope of the audit engagement; and
- Internal audit plan.

The duties above are the primary responsibilities of the Board, and should be the main focus of the Board's attention and activities. The Board is not responsible for the ongoing and detailed operationalization of its decisions; this is the responsibility of Senior Management.

[4] Refer to **Annex B** for a description of the Risk Appetite Framework.

2. Provide challenge, advice and guidance to the Senior Management of the FRFI, as appropriate, on:

Operational and Business Policies

- Significant operational, business, risk and crisis management policies of the FRFI, including those in respect of credit, market, operational, insurance, regulatory compliance and strategic risks, and their effectiveness; and
- Compensation policy for all human resources that is consistent with the Financial Stability Board (FSB) *Principles for Sound Compensation*[5];

Business Performance and Effectiveness of Risk Management

- Performance of the FRFI relative to the Board-approved business plan and strategy;
- Effectiveness of the Risk Appetite Framework;
- Effectiveness of the Internal Control Framework;
- Effectiveness of the Oversight Functions; and
- Effectiveness of significant policies and plans related to management of capital and liquidity (e.g., stress testing, ICAAP/ORSA report).

The duties above are the responsibility of Senior Management. The Board has the discretion to decide the extent and nature of its input, and to provide challenge, advice and guidance on these matters and others.

The Board should be satisfied that the decisions and actions of Senior Management are consistent with the Board-approved business plan, strategy and risk appetite of the FRFI, and that the corresponding internal controls are sound.

The Board and Senior Management

2. *Senior Management is responsible for implementing the Board's decisions and directing the operations of the FRFI.*

Senior Management is composed of the Chief Executive Officer (CEO) and individuals who are directly accountable to the CEO. This can include the heads of the Oversight Functions, such as the Chief Financial Officer (CFO), Chief Risk Officer (CRO), Chief Compliance Officer (CCO), Chief Internal Auditor (CIA), and Chief Actuary (CA), as well as the heads of major business platforms or units.

Senior Management is responsible for implementing the Board's decisions and directing the operations of the FRFI within the authority delegated to them by the Board, and in compliance with applicable laws and regulations.

[5] *Principles for Sound Compensation Practices,* Financial Stability Board (FSB), 2009.

In order to fulfil its responsibilities, the Board relies on Senior Management to provide sound advice on the organizational objectives, plans, strategy, structure and significant policies of the FRFI. Senior Management should set out information, options, potential trade-offs, and recommendations to the Board in a manner that enables the Board to focus on key issues and make informed decisions in a timely manner.

The Board should, in turn, understand the decisions, plans and policies being implemented by Senior Management and their potential impact on the FRFI.

The Board and the Oversight Functions

The Oversight Functions provide objective assessments to the directors to allow them to fulfill their responsibilities. The Oversight Functions identify, measure, and report on the FRFI's risks, assess the effectiveness of the FRFI's risk management and internal controls, and determine whether the FRFI's operations, results and risk exposures are consistent with the FRFI's risk appetite.

The heads of the Oversight Functions should have sufficient stature and authority within the organization, and should be independent from operational management. The heads of the Oversight Functions should have unfettered access and a functional reporting line to the Board or the appropriate Board committee.

The Board, with the support of Senior Management, should regularly assess the effectiveness of the FRFI's Oversight Functions.

Boards of Subsidiaries or with FRFI Subsidiaries

A FRFI that is part of a larger corporate group (another FRFI or company in Canada, or another company abroad) may be subject to or may adopt certain policies of the parent. In this situation, the subsidiary Board should be satisfied that these policies are appropriate for the FRFI's business plan, strategy and risk appetite, and comply with specific Canadian regulatory requirements.

If the parent is another FRFI, the parent Board should exercise adequate oversight of the activities of the subsidiary FRFI to be satisfied that the parent Board can meet its enterprise-wide oversight responsibilities applicable to FRFIs under this guideline.

Board Effectiveness

3. ***An effective Board should be independent and provide objective oversight of, thoughtful guidance, advice and constructive challenge to, Senior Management.***

The hallmarks of an effective Board include demonstrated sound judgment, initiative, proactiveness, responsiveness and operational excellence. Board members should strive to facilitate open communication, collaboration and appropriate debate in the decision-making process.

The Board should regularly assess its practices, and those of the Board committees, and should pursue strategies to enhance its overall effectiveness.

Board Composition

The Board should be diverse and, collectively, bring a balance of expertise, skills, experience, competencies and perspectives, taking into consideration the FRFI's strategy, risk profile, culture and overall operations. The contributions of individual directors will reflect their particular expertise, skills, experience and competencies.

Relevant financial industry and risk management expertise are key competencies for the Board. There should be appropriate representation of these skills at the Board and Board committee levels.

The Board should have a skills and competency evaluation process that is integrated with the overall Board succession or Board renewal plans, and that pays particular attention to the positions of the Chair of the Board and Chairs of the Board committees. Diversity should also be a factor in these plans.

Board Independence

The Board, collectively, should be independent from Senior Management and the operations of the FRFI.[6] Achieving independence can involve various Board structures and processes. Regardless of the approach, in all situations, OSFI views the separation of the Chair and CEO as critical (see next section). It is important that the Board's behaviour and decision-making processes are independent, objective and effective, taking into account the particular circumstances of the FRFI.

The Board's ability to act independently of Senior Management can be demonstrated through practices such as regularly scheduled Board and Board committee meetings that include sessions without Senior Management present.

To promote independence of thinking, the Board should have a director independence policy that considers, among other factors, the specific shareholder/ownership structure of the FRFI and director tenure. The recruitment process for new directors and the development of a director profile (both responsibilities of the Board) should emphasize the independence of Board members from Senior Management.

[6] The notion of "independent", as it applies in this guideline, is much broader than the notion of "non-affiliated", as defined in the federal financial institution statutes. It has been described and elaborated upon in various legal and international documents (e.g., securities law, international standards, and reports).

Board and Board Committee Chairs

> **4. *The role of the Board Chair should be separate from the CEO, as this is critical in maintaining the Board's independence and its ability to execute its mandate effectively.***

Effective Boards and Board committees require a Chair that is experienced, skillful and exhibits leadership that encourages open discussion and appropriate debate.

The Chair of the Board and the chairs of Board committees should have frequent dialogue with, and a strong level of influence among, other Board members and Senior Management, as well as access to all FRFI information and staff. Given the critical nature of the role, the Chair should also foster direct and on-going dialogue with regulators.

Board and Board committee chairs should be independent, non-executive[7] directors.

III. Risk Governance

> **5. *Consistent with their specific roles and responsibilities and through their behaviours, actions and words, the Board and Senior Management should promote a risk culture that stresses integrity and effective risk management throughout the FRFI.***

General

Risk taking is a necessary part of a FRFI's business. Accordingly, business strategies incorporate decisions regarding the risks the FRFI is willing to undertake and how it will manage and mitigate those risks.

Risk governance is a distinct and crucial element of the FRFI's corporate governance. Risks may arise from direct exposures taken by the FRFI, subsidiaries, affiliates or counterparties, or indirectly through activities that create risks to the FRFI's reputation. FRFIs should be in a position to identify the significant risks they face, assess their potential impact and have policies and controls in place to manage them effectively.

Risk Appetite Framework

> **6. *The FRFI should have a Risk Appetite Framework that guides the risk-taking activities of the FRFI.***

The FRFI should develop a Risk Appetite Framework that takes into account its risk profile. It should be enterprise-wide and tailored to the FRFI's domestic and international business activities and operations. On an on-going basis, the FRFI should be satisfied that the Risk Appetite Framework remains appropriate relative to the risk profile of the FRFI, its long-term strategic plan and its operating environment.

[7] A non-executive director is a member of the Board who does not have management responsibilities within the FRFI.

The Risk Appetite Framework, as approved by the Board, should be well-understood throughout the organization and embedded within the culture of the FRFI. All operational, financial and corporate policies, practices and procedures of the FRFI should be guided by the Risk Appetite Framework.

The Risk Appetite Framework should set basic goals, benchmarks, parameters and limits (e.g., level of losses) as to the amount of risk the FRFI is willing to accept, taking into account various financial, operational and macroeconomic factors. It should consider the material risks to the FRFI, as well as the institution's reputation vis-à-vis policyholders, depositors, investors and customers.

The Risk Appetite Framework should be forward-looking and consistent with the FRFI's business model, overall philosophy, short-term and long-term strategy and corresponding risk mitigation. It is intended to provide boundaries on the on-going operations of the FRFI with respect to asset class and liability choices, activities and participation in markets that are not consistent with the stated risk appetite of the institution.[8]

The establishment of controls and a process to ensure their effectiveness are critical elements of the Risk Appetite Framework, as they help to ensure that the FRFI stays within the risk boundaries set by the Board.

Oversight of Risk

Risk management systems and practices will differ, depending on the scope and size of the FRFI and the nature of its risk exposures. To manage risks effectively, the Board and Senior Management must understand the risks attendant to the FRFI's business model, including each business line and product, and how they relate to the FRFI's strategy and Risk Appetite Framework.

Board Risk Committee

7. *The Board should establish a Board Risk Committee[9] to oversee risk management on an enterprise-wide basis.*

Guided by the FRFI's Risk Appetite Framework, the Risk Committee should have an understanding of the types of risks to which the FRFI may be exposed, and the techniques and systems used to identify, measure, monitor, report on and mitigate those risks.

The Risk Committee should have a clear mandate. All Committee members, including the Chair, should be non-executives of the FRFI.

[8] Refer to **Annex B** for further details.

[9] For small, less complex FRFIs, in place of establishing a separate Risk Committee, the Board should be satisfied that it has the collective skills, time and information (i.e., appropriate reporting) to provide effective oversight of risk management on an enterprise-wide basis.

As part of its duty to oversee risk management of the FRFI, the Risk Committee should seek assurances from the CRO (or equivalent) that the risk management function of the FRFI is independent from operational management, is adequately resourced, and has appropriate status and visibility throughout the organization.

The Risk Committee should receive timely and accurate reports on significant risks of the FRFI and exposures relative to the FRFI's risk appetite (including approved risk limits). It should provide input on material changes to the FRFI's strategy and corresponding risk appetite. As well, the Risk Committee should be satisfied with the manner in which material exceptions to risk policies and controls are identified, measured, monitored, and controlled, as well as how exceptions/breaches are addressed.

Chief Risk Officer

8. *The FRFI should have a senior officer (CRO or equivalent[10]) who is responsible for the oversight of all risks across the firm.*

The CRO is the head of the FRFI's risk management function. The CRO and the risk management function are responsible for identifying, measuring, monitoring and reporting on the risks of the FRFI on an enterprise-wide and disaggregated level, independently of the business lines or operational management.

The CRO should have sufficient stature and authority within the organization, and should be independent from operational management. The CRO should have unfettered access and a functional reporting line to the Board or the Risk Committee.

The CRO and risk management function should not be directly involved in revenue-generation or the management and financial performance of any business line or product of the FRFI. As well, the CRO's compensation should not be linked to the performance (e.g., revenue generation) of specific business lines of the FRFI.

While the CRO and the risk management function should influence the FRFI's risk-taking activities (e.g., to ensure that the FRFI's strategy or business initiative is operating within the stated risk appetite of the FRFI), the on-going assessment of risk-taking activities by the CRO and risk management function should remain objective.

The CRO should provide regular reports to the Board, the Risk Committee and Senior Management in a manner and format that allows them to understand the risks being assumed by the FRFI. The CRO should provide an objective view to the Risk Committee or the Board, as appropriate, on whether the FRFI is operating within the Risk Appetite Framework. The CRO should meet with the Risk Committee or the Board on a regular basis, with and without the CEO or other members of Senior Management present.

[10] For small, less complex FRFIs, the CRO role can be held by another executive of the FRFI (i.e., the executive has dual roles). Some FRFIs may not have a CRO position *per se*, but nonetheless can clearly identify an individual within the FRFI that is accountable to the Board and Senior Management for the same functions. In these cases, the dual role must not compromise the independence required of the CRO.

The CRO and risk management function should have processes and controls in place to assess the accuracy of any risk information or analysis provided by business lines in order to provide objective reporting to the Board, the Risk Committee and Senior Management.

IV. The Role of the Audit Committee

Federal legislation requires that each FRFI establish an Audit Committee comprised of non-employee directors, a majority of whom are not "affiliated" with the institution. [11]

The statutory duties of the Audit Committee, as described in federal legislation, include reviewing the annual statements of the FRFI, evaluating and approving internal control procedures for the institution, and meeting with the Chief Internal Auditor and/or the Appointed Actuary[12] to discuss the effectiveness of the institution's internal controls and the adequacy of practices for reporting and determining financial reserves.[13]

The Audit Committee should approve the FRFI's audit plans (internal and external). Audit plans should be risk-based and address all the relevant activities over a measurable cycle. Where part or all of the internal audit function is outsourced, the Audit Committee should still be responsible for overseeing the performance of the FRFI's internal audit function as a whole.

The Audit Committee, not Senior Management, should recommend to the shareholders the appointment and removal of the external auditor. It should also agree to the scope and terms of the audit engagement, and review and recommend for approval by the Board the engagement letter and remuneration of the external auditor. Annually, the Audit Committee should report to the Board on the effectiveness of the external auditor.

The Audit Committee should discuss with Senior Management and the external auditor the overall results of the audit, the annual and quarterly financial statements and related documents, the audit report, the quality of the financial statements and any related concerns raised by the external auditor.

The Audit Committee should be satisfied that the financial statements present fairly the financial position, the results of operations and the cash flows of the FRFI. The Audit Committee should meet with the external auditor, the CIA and other heads of the Oversight Functions, as appropriate, with and without the CEO or other members of Senior Management present.

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[11] As defined in the federal legislation and the *Affiliated Persons Regulations* associated with each financial institution's governing statute.

[12] The role of the Appointed Actuary is outlined in OSFI's Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*.

[13] FRFIs should ensure that they are in compliance with the relevant securities requirements in respect of the Audit Committee in the relevant jurisdictions.

V. Supervision of FRFIs

The Role of Corporate Governance in OSFI's Supervisory Process

Effective corporate governance is an essential element in the safe and sound functioning of FRFIs. The Board and Senior Management are designated as key Oversight Functions in OSFI's *Supervisory Framework*.

Effective oversight of the business and affairs of an institution by its Board and Senior Management is essential to the maintenance of an efficient and cost-effective supervisory system. It helps protect depositors and policyholders, and allows OSFI to use the work of the FRFI's internal processes and functions, thereby reducing the amount of supervisory resources needed for OSFI to meet its mandate.

In addition, in situations where a FRFI is experiencing problems, or where significant corrective action is necessary, the important role of the Board is heightened and OSFI requires significant Board involvement in seeking solutions and overseeing the implementation of corrective actions.

OSFI's Supervisory Assessment

OSFI supervises FRFIs to assess their financial condition and monitor compliance with the applicable federal legislation. Supervision is carried out within a framework that is risk-focused.[14] OSFI has developed a comprehensive set of assessment criteria, key among which is the quality of oversight and control provided by the Board and Senior Management.

OSFI conducts supervisory work and monitors the performance of FRFIs to assess safety and soundness, the quality of control and governance, and regulatory compliance. The Board and Senior Management are ultimately accountable for the safety and soundness of the FRFI, as well as its compliance with federal legislation. As such, OSFI's reports and findings can provide useful input to the Board's own oversight of the FRFI. Open communication between the Board and regulators helps promote the mutual trust and confidence essential to the efficiency of OSFI's principles-based approach to supervision. Accordingly, OSFI expects to be promptly notified of substantive issues affecting the FRFI.

The Board should understand the regulatory environment within which the FRFI and its subsidiaries operate. It should be informed of the results of supervisory work by OSFI and other regulators, and should follow-up with Senior Management accordingly.

The Board should consider regulatory findings in its on-going evaluation of Senior Management and oversight function performance, recognizing that primary responsibility for identifying weaknesses rests with the Board and Senior Management.

OSFI will undertake a number of approaches, including discussions with the Board, Board committees, Senior Management and Oversight Functions, as well as the review of Board and

[14] Refer to OSFI's *Supervisory Framework*.

Board committee material, in order to assess the effectiveness of the FRFI's corporate governance. OSFI will look to gain insight into the discussions and deliberations at the Board and Committee level, including those with and without Senior Management. This may include understanding the Board's behaviour and assessing the objectivity, degree of challenge and independence in the decision making process.

Where separate Oversight Functions do not exist, OSFI will look to other functions, processes or controls to assess the independent oversight provided.

Changes to the Board or Senior Management

OSFI recognizes that FRFIs make independent decisions regarding the nomination of Board members or appointment of Senior Management in the course of conducting their day-to-day business.

As part of OSFI's on-going supervisory process, however, FRFIs should notify OSFI, as early as possible in the process, of any potential changes to the membership of the Board and Senior Management, and any circumstances that may adversely affect the suitability of Board members and Senior Management.

The process and criteria used by the FRFI in the selection process for Board and/or Senior Management members should be transparent to OSFI. Information regarding the qualifications of candidates of the Board and Senior Management should be provided to OSFI.

Annex A – The Special Nature of Financial Institutions

A number of factors set financial institutions apart from other business firms, and has led them to be subject to generally higher levels of regulation, including:

- The effectiveness of the economy depends significantly on how well its financial services sector functions. Relative to non-financial businesses, the failure of a financial institution can have a greater impact on members of the public who may have placed a substantial portion of their life savings with the institution and who may be relying on that institution for day-to-day financial needs. There is also potential in some circumstances for system-wide impacts from failures or material impacts in selected markets, given the interconnectedness of the financial system. Safety and soundness concerns are, therefore, of particular importance for financial institutions.
- Financial institutions may have high ratios of debt-to-equity (leverage), making them more vulnerable to unexpected adverse events.
- Financial institutions can experience severe liquidity problems if their customers or counterparties lose confidence in their safety and soundness.
- Financial institutions may accept funds from the public and often deal in long-term financial commitments, which are predicated on a high degree of confidence in the long-term stability and soundness of the institutions making these commitments.
- The value of many financial institutions' assets and liabilities can be volatile and may be difficult to price accurately. Similarly, financial institutions may issue and trade in complex financial instruments, which can be difficult to evaluate properly and can materially and rapidly affect the risk profile of an institution.
- Financial institutions can have large mismatches between the term of their assets and liabilities. This can result in material funding or investment risks.

These characteristics create unique challenges for the governance of financial institutions and underscore the importance of effective risk management systems and rigorous internal controls. They point to the need for knowledgeable, independent oversight exercised by or on behalf of the Board, along with the additional assurance of regulatory oversight, to provide assurance to markets on the reliability of reporting and disclosure. Also, as a consequence of being a regulated industry, the governance processes of financial institutions are subject to review and may be influenced by the views of OSFI and other regulatory bodies.

Finally, many financial institutions have complex organizational structures with a large number of entities (some of which may not be regulated) used to deliver different financial products and services. For these organizations, the relationship between the parent company and its subsidiaries merits special consideration and the effective governance of subsidiaries should be a high priority for the Board and Senior Management.

Annex B – Risk Appetite Framework

The Risk Appetite Framework should contain a risk appetite statement and risk limits, as well as an outline of the roles and responsibilities of those overseeing the implementation of the Risk Appetite Framework. The Risk Appetite Framework is an integral part of the FRFI's overall enterprise-risk management framework.

Risk Appetite Statement

The risk appetite statement reflects the aggregate level and type of risk that the FRFI is willing to accept in order to achieve its business objectives. Key features of the risk appetite statement are:

- It should be linked to the FRFI's short-term and long-term strategic, capital and financial plans, as well as compensation programs.
- It includes qualitative and quantitative measures that can be aggregated and disaggregated.
    - Qualitative measure may include:
        - Significant risks the FRFI wants to take and why;
        - Significant risks the FRFI wants to avoid and why;
        - Attitude towards regulatory compliance; and
        - Underlying assumptions and risks.
    - Quantitative measures may include:
        - Measures of loss or negative events (such as earnings, capital or liquidity, earnings per share at risk or volatility) that the FRFI is willing to accept.
- It should be forward-looking.
- It should consider normal and stressed scenarios.
- It should aim to be within the FRFI's risk capacity (i.e., regulatory constraints).

Risk Limits

Risk limits are the allocation of the FRFI's risk appetite statement to:

- Specific risk categories (e.g., credit, market, insurance, liquidity, operational);
- The business unit or platform level (e.g., retail, capital markets);
- Lines of business or product level (e.g., concentration limits); and
- More granular levels, as appropriate.

Risk limits are often expressed in quantitative terms, and are specific, measurable, frequency-based and reportable.

Implementation of the Risk Appetite Framework

Once approved by the Board, the Risk Appetite Framework should be implemented by Senior Management throughout the organization as an integral part of the overall enterprise risk management framework of the FRFI. The Risk Appetite Framework should align with the organization's strategy, its financial and capital plans, its business unit strategies and day-to-day operations, as well as its risk management policies (e.g., risk limits, risk selection/underwriting guidelines and criteria, etc.) and compensation programs.

Where the Risk Appetite Framework sets aggregate limits that will be shared among different units, the basis on which such limits will be shared should be clearly identified and communicated.

Effective control, monitoring and reporting systems and procedures should be developed to ensure on-going operational compliance with the Risk Appetite Framework, including the following:

- The CRO (or equivalent) should ensure that aggregate risk limits are consistent with the FRFI's risk appetite statement.
- The CRO (or equivalent) should include in regular reports to the Board or Risk Committee, and Senior Management, an assessment against the risk appetite statement and risk limits.
- Internal Audit should routinely assess compliance with the Risk Appetite Framework on an enterprise-wide basis and in its review of units within the FRFI.

The Board and Senior Management should receive regular reports on the effectiveness of, and compliance with, the Risk Appetite Framework. These reports should include a comparison of actual results versus stated Risk Appetite Framework measures. Where breaches are identified, action plans should exist and be communicated to the Board. The Risk Appetite Framework should be an integral part of the Board's discussions and decision-making processes.

Guideline

Subject: Earthquake Exposure Sound Practices

No: B-9 Date: February 2013

I. Purpose and Scope

Catastrophic losses from exposure to earthquakes may pose a significant threat to the financial wellbeing of many Property & Casualty (P&C) insurers and reinsurers (insurers). As such, insurers must effectively measure, monitor and limit their exposures in accordance with a prudent risk appetite and risk tolerance.

The complexities associated with managing earthquake exposures, combined with the potential severity of losses, the difficulty of mitigating the risk post-event, and the high public profile of a major earthquake require insurers to have comprehensive policies and procedures in place, along with an appropriate level of oversight to ensure that they are effective.

This Guideline sets out OSFI's expectations for policies and procedures applicable to insurers[1] that write business materially exposed to earthquake-related losses. These policies and procedures should form part of an insurer's overall catastrophe risk management. OSFI recognizes that individual insurers may have differing earthquake exposure risk management depending on, among other factors, their: size; ownership structure; nature, scope and complexity of operations; corporate strategy; and risk profile.

The Guideline also sets out common parameters and other factors to be considered when calculating probable maximum loss (PML). This information, when compared to the level of financial resources available, will enable an insurer to assess its capacity and financial preparedness to handle claims that may arise from a major earthquake. As further described in the Guideline, insurers are expected to report certain earthquake exposure information to OSFI on an annual basis.

[1] For the purposes of this guideline, "insurers" refers to all federally regulated property and casualty insurers, including domestic insurance companies that are not mortgage insurance companies and foreign insurance companies in respect of their insurance business in Canada.

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II. Key Principles

The following key principles are intended to assist insurers in developing prudent approaches to managing their earthquake risk. OSFI will assess an insurer's earthquake exposure risk management policy against these principles and, where considered necessary, will require remedial action consistent with its early intervention mandate.

Prudent use of catastrophe models to measure earthquake exposure risk is an important component of sound earthquake exposure risk management, and the following principles make numerous references to sound practices for use of catastrophe models. At the same time, there is significant uncertainty associated with catastrophe modeling, and it is critical that all users of the output of catastrophe models are conscious of this uncertainty. Accordingly, good corporate governance for this risk and other risk management techniques, such as risk limits, risk transfer and risk avoidance should also be considered by the insurer, and references in this guideline to these alternatives are as important as the guidance on the use of catastrophe models.

1. ***Earthquake Exposure Risk Management*** **-** Insurers should have a sound and comprehensive earthquake exposure risk management policy that is overseen by senior management.

Policies & Procedures

Earthquake policies and procedures should document the significant elements of the insurer's approach to managing its earthquake risk.

Earthquake policies and procedures should include:

- the institution's risk appetite and risk tolerance for earthquake insurance;
- data management practices;
- exposure aggregation monitoring and reporting;
- appropriate understanding, selection and use of earthquake models, including considerations for model limitations, uncertainties and non-modelled classes of business;
- identification and estimation of relevant PML factors;
- the nature and adequacy of financial resources available in relation to the PML;
- contingency plans to ensure adequate claim handling resources and continued efficient operations;
- consideration of potential increases in claim and operating costs following a major loss event.

Senior Management

OSFI expects senior management[2] to oversee the development of earthquake policies and procedures and to ensure that they are effectively implemented. At a minimum, senior management should review and discuss the policies and procedures as part of its periodic review of overall catastrophe risk management.

Senior management is responsible for implementing the policies and procedures throughout the organization. Exposure management is an ongoing process, and effective management may require internal reporting more frequently than annually. The exposure should be managed across the insurer, considering the accumulation of all related risks, such as insurance, reinsurance, investments and operations.

Senior management should ensure that appropriate internal controls exist to monitor the effectiveness of, and operational compliance with, the earthquake policies and procedures on an on-going basis. Further, there should be controls in place to ensure the nature of exposure to earthquake risk (low frequency / high impact) is appropriately aligned with the design of management and broker/agent compensation plans. While all oversight functions are expected to contribute to this effort, the actuarial function can play a very important role in reviewing models used to determine exposures, the adequacy of the reinsurance programs to mitigate these exposures, and the pricing of earthquake insurance when delegated by senior management.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of insurer Boards of Directors in regards to operational, business, risk and crisis management policies.

2. *Earthquake Exposure Data* - Earthquake exposure data needs to be appropriately captured and regularly tested for consistency, accuracy and completeness.

The data required to run earthquake models goes beyond that traditionally used to rate insurance policies. Improving data consistency, accuracy and completeness is one area where an insurer's efforts can significantly reduce the uncertainty inherent in earthquake exposure measurement. Good earthquake exposure data facilitates the management of this risk through risk transfer, pricing and monitoring against limits as well as catastrophe modeling.

Data Integrity

An insurer's earthquake policies and procedures should reflect a strong commitment by senior management to obtain consistent, accurate and complete data to estimate the insurer's exposure to earthquake risk. Senior management needs to understand the data requirements of the model(s) used and place a high priority on the quality of data and its timely capture. Data quality needs to be considered within the context of the assumptions and requirements of the earthquake model(s) used. If necessary, new processes should be put in place to improve data quality.

[2] For foreign company branch operations in Canada, OSFI looks to the Chief Agent to oversee the management of the branch.

Responsibilities for the accuracy of data should be clearly defined, both within the insurer and in dealing with outside parties. Since intermediaries such as brokers and agents are often responsible for data collection, senior management should have policies and procedures in place to ensure that the data collected meets the insurer's requirements.

As data quality is often impacted by a trade-off between completeness and accuracy, the insurer should implement a quality control process around data collection and entry including the adoption of criteria to measure data completeness and accuracy. Processes may include:

- Scoring data quality at the time of underwriting;
- Conducting remediation of sources providing inadequate data;
- Developing and implementing safeguards to prevent data collectors from miscoding business; and
- Investing in technology to improve data quality.

Data verification

OSFI expects insurers to have processes in place to verify that their databases are accurately capturing all the data received. While the quality of individual risk data is often the key driver of overall data quality, an aggregate analysis and assessment of the overall data quality of a portfolio/group of risks may be the most appropriate approach when the (re)insurer has limited access to the underlying policy processing system. This will often be the case for assumed reinsurance portfolios. Accordingly, reinsurers should have processes in place to evaluate the quality of data submitted by their cedants.

Data limitation

Senior management also needs to understand the data limitations and the level of possible errors in the data. While perfect data is the objective, it will be difficult or impossible to achieve this in practice. Therefore, senior management must understand the possible impact of data limitations on the results projected by the model and make prudent adjustments to the model estimates.

Data should be subject to periodic (at least annually) review by individuals independent of those responsible for data collection and data quality. While the insurer may use reinsurance brokers for this independent review, this work should extend beyond the regular review of data prior to submission to reinsurers to include a specific report that acknowledges that their work is being done to support the insurer's compliance with this guideline. Less frequent and broader external reviews of the insurer's data policies, testing and reporting can add value by providing independent benchmarking.

These reviews should cover the completeness, accuracy and consistency of the exposure data as well as the processes applied and the steps taken to achieve adequate data completeness and accuracy. Documentation of the testing and sign-off from the reviewers should be obtained. Testing, which should ensure that errors and erroneous coding are not occurring, could include:

- Summarizing data by key occupancy, construction and geocode and reviewing statistics such as the percent of data with known attributes, the amount of bulk coding and the most frequently observed values;
- Comparing year-to-year exposure changes;
- Using historical loss experience, if available, to identify specific portfolio coding issues and behaviour vs. model construction and assumptions; and
- Running portfolio-specific data quality sensitivity tests as a regular part of portfolio risk analysis process and incorporating into risk decision making

Senior management needs to ensure a plan is developed and documented to address all concerns identified in the reviews and select an appropriate time frame for updating the portfolio exposure data and model results.

3. ***Earthquake Models -*** Earthquake models should be used with a sound knowledge of their underlying assumptions and methodologies, as well as with a high degree of caution that reflects the significant uncertainty in such estimates.

Use of Earthquake Models

Insurers are expected to utilize theoretically sound earthquake models as part of their earthquake exposure management. Considering that earthquake-related PMLs are derived from a complex set of variables and related assumptions, earthquake models are an essential tool in providing a systematic approach to such estimates. However, while earthquake models continue to be refined as new information emerges, they have significant limitations and a high degree of inherent uncertainty. This uncertainty is demonstrated by the material differences observed when model estimates are compared to actual events and by the wide range of results from model to model. Nevertheless, when users appropriately consider model limitations and uncertainties, they provide a basis for PML estimation and reinsurance arrangements. Similarly, models further enhance their value as a risk management tool when they are also used to monitor earthquake exposure accumulations and to assist in underwriting decisions.

Sound Earthquake Model Practices

Earthquake models are available through a variety of means. They may be licensed from various commercial vendors and maintained in-house or run by third parties on behalf of the insurer. Some insurers have also developed their own in-house models. In any event, in order to ensure that earthquake models are appropriately used, insurers are expected to:

- Document how the use of earthquake models fits within their earthquake risk management process, including PML estimates and, where applicable, how models are used to monitor exposure accumulations and make underwriting decisions;
- Understand current modelling alternatives and why the model used is appropriate for the applicable insurance portfolio;

- Ensure there are adequately qualified staff to appropriately run the models on a regular basis when earthquake models are used in-house;
- Have a sound understanding of the key assumptions, methodologies and limitations underlying the model used, including:
    - how different settings (i.e., switches) impact PML estimates; insurers will need to justify why selected settings are appropriate when they vary from those recommended per the model;
    - ability to handle related factors such as demand surge, fire following and business interruption;
    - how changes in portfolio characteristics influence PML variability;
    - modelled losses versus non-modelled losses;
- Understand model uncertainty and how this is addressed in determining capital adequacy and related reinsurance arrangements;
- Have evidence that the granularity and quality of data used is appropriate for the model;
- When more than one model is used and they produce materially different results, be able to explain the results of their efforts to identify the key reasons for the differences and explain how this work is reflected in parameterization and adjustments (if any) to the particular model(s) chosen as the basis for PML.

Model Versions

While the use of an earthquake model is important, it represents only one element in an insurer's risk management framework for earthquake exposure. While models continue to be refined, they retain inherent uncertainty. To counter the inherent uncertainty in models, insurers should consider the use of more than one model. Insurers should implement material updates to commercially available models in a timely manner. More specifically, it is expected that within one year of the release of any material change in a model, the revised model will be used, or an explanation provided for why not. Insurers are to identify the model(s) and version they are using.

When using vendor software to determine its PML, it is important for an insurer to understand the model, its purpose, use and limitations. The model documentation should provide sufficient detail to understand the model methodology, parameters, mathematical basis, limitations and specific insurer modelling refinements used.

Where an earthquake model has been developed in-house, it is expected to be updated on a regular basis and periodically tested for functionality and comparative PML results against other commercially available models.

Model Validation

Model validation provides important information on the performance of models.

An important element of this process is to ensure that the model prudently captures risks based upon actual events. This analysis should demonstrate that, over a sufficient historical period, the model-based measurement of loss is consistent with actual losses. To the extent that insufficient data exists to validate the model, an alternative but suitable prudent proxy should be employed for validation.

For example, one could compare the few major historical earthquake events to the losses produced by similar events in the model and assess any divergences. Given the limited number of major historical Canadian earthquakes, it may also be helpful to consider the lessons learned from earthquake events in other parts of the world.

One could also compare the modelled tail losses to market prices for reinsurance coverage. This test is not a validation *per se* but, rather, will serve as a source for further investigations. An outcome might be that the risk is treated more conservatively than the vendor model would show.

The setting and refinement of model parameters, including loadings for non-modelled risks or costs, should be robust and reflect the results of the model validation process.

The model validation process should be documented, and should clearly identify any limitations of the model or the data in assessing risk and should discuss how any such material deficiencies are mitigated.

4. ***PML Estimates*** **-** PML estimates should properly reflect the total expected ultimate cost to the insurer, including considerations for data quality, non-modelled exposures, model uncertainty and exposures to multiple regions.

While models are an essential tool in assisting insurers in the management of their earthquake exposures, they are limited in their capabilities. This results in a significant degree of uncertainty. As such, while insurers are required to develop PML estimates in accordance with this principle, they are also encouraged to consider other exposure limitation techniques, such as concentration limits by geography, occupancy and/or construction type.

Data Quality

Senior management needs to understand the possible impact of data limitations on the results projected by the model and to make prudent adjustments to the model estimates. While the upward PML adjustment may be necessary to offset some data shortcomings, it should be understood that a large adjustment to the PML for data quality is not a substitute for appropriate data capture.

Non-Modelled Exposures and Risk Factors

Many risks cannot be, or are difficult to, adequately consider within an earthquake model. As such, insurers need to take an inventory of exposures and risk factors relevant to their business and identify those that are not included in the model used. These non-modeled exposures and risk factors may include:

- exposure growth between the date of the data and the end of the relevant period of exposure;
- contingent business interruption;
- auto and marine insurance;
- claims handling expenses;
- adequacy of *insurance to value*;
- guaranteed replacement cost;
- increased seismicity after a large event; and
- blanket coverage and coverage extensions or clauses (i.e., debris removal).

These exposures and risk factors may be relatively small individually; however, their accumulation may be significant and need to be considered as part of an insurer's earthquake PML.

Model Uncertainty

Many vendor models now automatically recognize the uncertainty associated with the conversion from the location specific estimate of ground motion to damage levels (secondary uncertainty) in their standard model outputs. There are other sets of assumptions in the earthquake models that are in a continuous process of being updated and refined. When considering its PML as a measure of the potential financial impact on the insurer, senior management needs to prudently factor in a margin of safety to reflect the uncertainty of these additional assumptions.

Exposures to Multiple Regions

Earthquake PMLs have historically been based on the larger of the British Columbia or Quebec PMLs. This approach understates the PML for insurers with significant exposures in both earthquake zones. It also ignores earthquake exposure elsewhere, which can have a material impact. Earthquake PMLs should be estimated and reported to senior management based on Canada wide[3] exposure for foreign insurers or worldwide exposure for Canadian insurers, as well as any regulatory capital requirements. Therefore, insurers are expected to take account of risk which may result from exposures to more than one region.

5. ***Financial Resources and Contingency Plans -*** Insurers need to ensure that they have an adequate level of financial resources and appropriate contingency plans to successfully manage through a major earthquake.

Throughout this section, PML refers to a dollar amount that includes adjustments for data quality, non-modelled exposures and model uncertainty as outlined in Principle 4 above.

[3] Throughout this guideline, Canada wide includes business reported on a company's P&C-2 by virtue of the application of Part XIII.

Financial Resources

Earthquake policies and procedures should quantify an insurer's willingness to take on earthquake insurance risk and outline how the insurer's financial resources cover its gross PML. Insurers should refer to OSFI's Guideline Minimum Capital Test for Federally regulated Property and Casualty Companies (MCT Guideline) in order to determine if they meet the regulatory test of financial preparedness for earthquakes. The following represent financial resources that could be used to support the insurer's earthquake exposures:

1. *Capital and Surplus*

The MCT Guideline defines capital and surplus, making appropriate distinctions between Canadian incorporated insurers and Canadian branches of foreign insurance companies. It also specifies the maximum retention that can be supported within the insurer's capital and surplus.

2. *Earthquake Reserves*

Refer to the MCT Guideline for details on the earthquake reserve requirements**.**

3. *Reinsurance Coverage*

While most insurers will use a catastrophe reinsurance treaty for this purpose, other reinsurance, such as per risk, quota share and whole account excess of loss may provide substantial coverage for some insurers. When an insurer includes non-catastrophe reinsurance in its determination of available financial resources, it needs to be prepared to demonstrate that it has appropriately considered per event limits and other events, terms and conditions that would otherwise exhaust coverage provided by these other types of reinsurance. In the case of whole account reinsurance insurers may need to use a full stochastic model.

Formal reinsurance agreements, evidenced by written documents between Canadian incorporated insurance companies and their foreign parent institutions, constitute a traditional mechanism with which insurers manage their insurance exposure. Other supporting financial arrangements provided by parent companies, such as letters of credit or guarantee facilities, cannot be used to support the insurer's gross PML exposure.

Reinsurance programs should be arranged following Guideline B-3 *Sound Reinsurance Practices and Procedures*. Insurers that participate in global catastrophe reinsurance program must consider:

- on-going protection for Canadian operations (e.g., exhaustion of layers or program by other events); and
- adequacy and recoverability if other regions are impacted by the same event.

4. *Capital Market Financing*

Insurers can enter into innovative financing transactions designed to hedge their risk for a catastrophic event. In some cases, these are standby capital market financing facilities that become operative when a catastrophe occurs. Insurers also need to respect the provisions of the *Borrowing* (*Property and Casualty Companies and Marine Companies) Regulations*. Prior approval from OSFI is required before these instruments can be recognized as a financial resource under the MCT Guidelines.

Contingency Plans

Insurers must have contingency plans in place to ensure continued efficient business operations. The contingency plan should address the key elements of claims management, such as emergency communications links, availability and adequacy of claims and adjustment service personnel, and off-site systems back-up, that also includes reinsurance records.

III. Regulatory Reporting

All insurers will be required to annually file an *Earthquake Exposure Data* form with OSFI. The form will be updated periodically, and detailed instructions will be provided each year.

Insurers without material earthquake exposure should submit a letter stating this fact.

Note that earthquake exposure can exist for automobile and marine policies, as well as property policies, can arise from secondary sources such as fire-following and tsunami, and that all Canadian regions have some exposure to shake events.

IV. Guideline Administration

Supervisory Information

Enhanced transparency will allow OSFI to better understand the economic impacts and risks associated with an insurer's earthquake exposure. Insurers with material exposure to earthquake risk are required to maintain and provide to OSFI, upon request, their policies that govern the earthquake exposure risk management, including PML and supporting reinsurance programs. Insurers with material exposure to earthquake risk should ensure that their overall catastrophe risk management provides enough coverage with respect to the B-9 principles.

OSFI expects the insurer's annual Dynamic Capital Adequacy Testing (DCAT) will consider an earthquake event, and that the DCAT report will either include this scenario or document the rational for not including it. The actuary would ensure consistency with any minimum return period for an earthquake event that may be required by the regulator.

Capital / Asset Requirements

Earthquake exposure may be a major risk to an insurer. If an insurer fails to meet the principles set out in this Guideline, on a case-by-case basis, OSFI may use its discretionary authority to adjust the insurer's capital / asset requirements or target solvency ratios.

Reporting

A senior officer of an insurer should regularly report to senior management, details on the earthquake exposure and how the exposure is being managed. The officer should confirm the insurer's practices and procedures meet, except as otherwise disclosed, the standards set in this Guideline. The report should also include the PML and detail the financial resources that support the exposure. The report should be available to OSFI, upon request.

Implementation

Each insurer should file an approved copy of its earthquake exposure risk management policy with its designated OSFI Relationship Manager.

V. Description of Terms

The following descriptions of terms are provided for their usage in the context of this guideline.

Earthquake Insurance - principally covers the damage from the initial shaking, but also covers the related risks of fire following and tsunami. Shake insurance is usually sold as an endorsement or rider to an insurance policy and covers damages to property and contents. In addition, it may include business interruption, additional living expenses, automobile damage and other types of coverage. Fire following an earthquake is the second main earthquake-related risk. Studies have shown that fire following damages can be quite severe because of broken gas mains, curtailment of water supply, road blockage for fire engines, etc. Coverage for damages from this risk may be sold as an endorsement or rider to an insurance policy (where legislation permits) or, alternatively, is sold as part of the standard property policy. Depending upon how this insurance is packaged, business interruption, additional living expenses, etc., may also be covered. A tsunami may also follow an earthquake that occurs under an ocean or a large lake. Although the impact of tsunamis is limited to coastal areas, their destructive power can be enormous and insurers should consider whether or not coverage (direct or indirect, as noted above for quake and fire following) is provided by any of their policies.

Probable Maximum Loss (PML) - the threshold dollar value of losses beyond which losses caused by a major earthquake are unlikely. When probabilistic models are used, PML is return period loss, which is defined as the dollar level of loss expected to be exceeded once in every X years. Gross PML is the PML amount *after* deductibles but *before* catastrophic and other reinsurance protection. Net PML is the PML *after* deductibles and catastrophic and other reinsurance protection. Note that a gross net PML (that is, after deductibles and other reinsurance inuring to the catastrophe treaty) is relevant to the placement of the catastrophe treaty; it is not directly relevant to this guideline.

Risk Appetite - the total level and type of risk exposure that an insurer is willing to undertake to achieve its objectives. Risk Appetite is often a qualitative assessment.

Risk Tolerance - specific parameters and/or limits on the level and amount of risk an insurer is willing to accept/retain.

VI. Other OSFI Guidance

This Guideline is complementary to, and should be read in conjunction with, other OSFI guidance that implicitly or explicitly addresses various elements of earthquake or governance, including:

The *Supervisory Framework* - describes the principles, concepts, and core process that OSFI uses to guide its supervision of federally regulated financial institutions (FRFIs).

Minimum Capital Test - for federally regulated property and casualty insurers;

Corporate Governance Guideline - provides information to Boards and management of insurers about OSFI's expectations on corporate governance;

Guideline B-3: *Sound Reinsurance Practices and Procedures* - sets out expectations for effective reinsurance practices and procedures; and

Guideline E-17: *Background Checks on Directors and Senior Management of Federally Regulated Entities (FRE)* - outlines principles to assess the suitability and integrity of directors and senior management by FREs.

Guideline

Subject: **Appointed Actuary: Legal Requirements, Qualifications and Peer Review**

Category: **Sound Business and Financial Practices**

No: E-15 **Date: August 2003**
Revised: November 2006
Revised: September 2012

Introduction

This Guideline describes the role of the Appointed Actuary in federally regulated insurance companies[1] and sets out some of OSFI's expectations with respect to that role. The Guideline is divided into three parts. The first part summarizes the major responsibilities of the actuary as described in the *Insurance Companies Act* (ICA) and the related Guidelines and Memoranda published by OSFI[2]. The second part deals with the actuary's qualifications required to carry out the Appointed Actuary's role, and the third part sets out OSFI's expectations with respect to peer review of the Appointed Actuary's work and reports.

Other OSFI Guidelines and Memoranda[3] contain additional information related to the responsibilities of the Appointed Actuary. Particularly important in this regard is the annual Memorandum to the Appointed Actuary. OSFI issues separate versions of the Memorandum to actuaries of life insurance companies and to actuaries of property and casualty insurance companies.

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1 In this Guideline, federally regulated insurance companies means Canadian insurance companies, including fraternal benefit societies and provincial companies (as that term is defined in subsection 2(1) of the *Insurance Companies Act*) and Canadian branches of foreign insurance companies, including foreign fraternal benefit societies.

2 The legislative summary in this Guideline is not intended to be a substitute for provisions of the ICA. The reader is advised to refer to the provisions of the ICA and not to rely on the interpretation of those provisions contained in this Guideline.

3 e.g., *Memorandum to the Appointed Actuary on the Report on the Valuation of Life Insurance Policy Liabilities*, *Memorandum for the Actuary's Report on Property and Casualty Insurance Business*, Guideline A: *Life Insurance Capital Adequacy Test*, Guideline E-12: *Inter-Segment Notes for Life Insurance Companies, Guideline D-9: Sources of Earnings Disclosure (Life insurance companies).*

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Section 1: Legal Requirements of the Appointed Actuary

This part summarizes a number of sections in the ICA (the applicable sections of the ICA are shown in brackets) that relate to the appointment and role of the Appointed Actuary, as well as key provisions of related Guidelines and Memoranda published by OSFI. It also sets out the Superintendent's expectations regarding the annual reporting of companies' expected future financial condition. The ICA refers to the *actuary of the company*. In this Guideline, in keeping with common usage in the insurance industry, this person is referred to as the *Appointed Actuary* (AA).

a. Appointment of an Actuary

Each company[4] must appoint an actuary of the company (49(1), 165(2)(i), 623(1), 660(1)(a)) and notify the Superintendent, in writing, of the appointment (357, 623(2)). The AA must be a Fellow of the Canadian Institute of Actuaries (FCIA) (2(1)).

The chief executive officer or the chief operating officer (or a person performing like functions) of a Canadian company or society or of a provincial company, or the chief agent of a foreign company, may not be appointed as AA unless authorized in writing by the Superintendent (359.1(1), 624.1(1)). In the case of a Canadian or provincial company, the chief financial officer or a person performing like functions may not be appointed as AA unless the audit committee of the company has provided a written statement to the Superintendent and the appointment is authorized by the Superintendent (359.2).

The directors of a company or, in case of a foreign company, the company itself, may revoke the appointment of the AA. If this happens, the company must notify the Superintendent, in writing, of the revocation (360, 625). An AA who resigns or whose appointment is revoked shall submit to the Superintendent and to the directors of a Canadian or provincial company or to the chief agent of a foreign company a written statement that includes the circumstances and reasons for the resignation or why, in the actuary's opinion, the appointment was revoked (363, 627(1)).

Where an AA resigns or their appointment is revoked, no person shall accept an appointment or consent to be appointed as AA before requesting and receiving from the previous company actuary the written statement that was submitted to the directors or the chief agent and to the Superintendent (364(1), 627(2)). An appointment may be accepted if no reply is received within fifteen days after a request was made (364(2), 627(3)).

[4] When unmodified, the term "company" refers to Canadian insurance companies, provincial companies (as that term is defined in subsection 2(1) of the *Insurance Companies Act*), fraternal benefit societies and Canadian branches of foreign insurance companies and foreign fraternal benefit societies.

b. Role and Duties of the Appointed Actuary

The AA is required to value the actuarial and other policy liabilities as at the end of a financial year, and any other matters specified by the Superintendent. The AA's valuation is required to be in accordance with accepted actuarial practice, with such changes and any additional directions that may be made by the Superintendent (365, 629). The AA's report in the annual financial statement must opine that the policy liabilities are valued in accordance with accepted actuarial practice (367). It is expected that the valuation includes the selection of appropriate assumptions and methods, where each separate assumption is expected to be appropriate. It should be noted that the Superintendent may appoint an actuary to value certain liabilities or other matters if the Superintendent is of the opinion that it is necessary (365.1(1), 629.1(1)).

The liabilities shown in the annual return are required to include as a reserve the value of the actuarial and other policy liabilities (667(1)). The AA is required to make, and the company to file with its annual return, the Appointed Actuary's Report (AAR) on the policy liabilities and on any other matters the Superintendent may specify in a form determined by the Superintendent (667(2)). OSFI's annual Memorandum to the Appointed Actuary contains up-to-date instructions on the form and content of this report. Also, the AA shall, not less than twenty-one days before the date of the annual meeting of a Canadian or provincial company, make a report on the valuation of the liabilities to the shareholders and policyholders. The AA shall state whether, in the AA's opinion, the annual statement presents fairly the results of the valuation (367).

The AA is also required in each financial year to meet with and report to the directors or the chief agent on the company's financial position. When directed by the Superintendent, the AA must also report on the company's expected future financial condition (368, 630). A report on the company's expected future financial condition is normally prepared as described in the Canadian Institute of Actuaries (CIA) standard of practice on Dynamic Capital Adequacy Testing (DCAT).

The Superintendent expects that a report on the company's expected future financial condition will be prepared annually in compliance with the CIA standards. The DCAT report should be presented to the directors of the company, or where the directors so choose, with an appropriate subcommittee of the board (e.g. audit committee, risk committee, etc.). A DCAT report shall be based on the prior year end financial position or a more recent position. If the DCAT report is presented to the board of directors in the second half of the financial year, then it shall include material changes in experience and in financial position up to the period of 90 days before the date of presentation. It is expected that the projection period for studies of life companies will be for at least five years and for P&C companies will be for at least three years. A copy of the report will be filed with OSFI within thirty days of presentation to the company's directors, but no later than the end of the calendar year.

In addition to the DCAT, the AA is required to report, in writing, to the chief executive officer and the chief financial officer or to the chief agent of the company any matters that, in the AA's opinion, have material adverse effects on the financial condition of the company and that require

rectification. The AA must supply a copy of this report to the board of directors. Where, in the opinion of the AA, suitable action is not being taken to rectify these matters, the AA shall send a copy of the report to the Superintendent and advise the directors or the chief agent of the company that this has been done (369, 631).

When a company maintains a participating account (456), the directors of a company must establish a policy for determining the dividends and bonuses to be paid to the participating policyholders and a policy respecting the management of each of the participating accounts (165(2)(e)) and (165(2)(e.1)). The AA is required to report to the directors in writing on the fairness to participating policyholders of any policy established or amended under 165(2)(e) and 165(2)(e.1) and report at least once a year on its continuing fairness (165(3.1) and 165(3.2)).

The AA is required to report, in writing, to the directors on the fairness to participating policyholders of a proposed dividend, bonus or other benefit and whether it is in accordance with the dividend or bonus policy. The directors must consider the actuary's report before declaring the dividend, bonus or other benefit on participating policies (464(2)).

The AA is required to provide the company with a written opinion on whether the method selected for allocating investment income or losses and expenses to the participating account is fair and equitable to the participating policyholders (457, 458). The company must file a copy of the AA's written opinion with the Superintendent (459), together with a description of the allocation method.

Each year, the AA must report, in writing, to the directors on the fairness and equitableness of the allocation method used by the company (460). The AA is also required to report on whether payment to shareholders or a transfer to an account from which payments can be made to shareholders from the profits of the participating account would materially affect the company's ability to comply with its dividend or bonus policy or to maintain the level of dividends paid to participating policyholders (461(c)).

The directors of a company must establish criteria for changes made by the company to the premium or charge for insurance, amount of insurance or surrender value in respect of its adjustable policies (165(2)(e.2)). The AA is required to report to the directors in writing on the fairness to adjustable policyholders of the criteria established or amended under 165(2)(e.2)) and report at least once during each financial year on their continuing fairness (165(3.3)).

The AA is required to report, annually and in writing, to the directors on whether the changes the company made in respect of its adjustable policies during the preceding 12 months are in accordance with the criteria established under paragraph 165(2)(e.2) and are fair to the adjustable policyholders (464.1(1)).

Additional requirements and guidance concerning participating accounts can be found in the *Policyholders Disclosure Regulations* and OSFI's Guideline E-16 *Participating Account Management and Disclosure to Participating and Adjustable Policyholders.*

For insurance companies, OSFI's guideline: *Life Insurance Capital Adequacy Test* (LICAT) sets out requirements for the test of capital adequacy. The LICAT and Life Insurance Margin Adequacy Test (LIMAT) returns require the AA's confirmation that the instructions pertaining both to the LICAT guideline and to the annual return have been followed. OSFI also expects an opinion signed by the AA and a memorandum, both covering the areas where the calculation required discretion or where significant technical calculations, methodologies and judgements were applied.

Section 2: Qualifications Required

As previously noted, the AA is required to be an FCIA. The AA is, therefore, subject to the CIA's Rules of Professional Conduct. Rule 1 requires the AA to act honestly and to perform professional services with integrity, competence, skill and care. Rule 2 requires a CIA member to perform professional services only when the member is qualified to do so and meets applicable qualification standards. Professional services performed by a CIA member must, under Rule 3, meet applicable standards of practice.

The Superintendent may disqualify or remove a senior officer if the Superintendent is of the opinion that the senior officer is not suitable to hold the position (678.1(4) and 678.2(1)).

In assessing the suitability of an AA, the Superintendent expects that the AA has each of the following qualifications:

1. has appropriate Canadian practical experience, which is defined as Work in Canada[5] for at least three of the last six years, of which at least one year was performing valuation of Canadian actuarial liabilities of an insurance company;
2. has experience with the CIA's Standards of Practice and relevant insurance legislation and regulation;
3. is up to date with respect to the CIA's Continuing Professional Development requirement;
4. has not been the subject of an adverse finding by a CIA Disciplinary Tribunal. Where there has been such a finding, the Superintendent may nevertheless conclude that the AA is a suitable person if the circumstances of the case and other information support such a conclusion.

[5] "Work in Canada" is as defined in the CIA standards.

Section 3: Peer Review of the Work of the Actuary

a. Background

OSFI believes that regular peer review of certain work performed by the AA is of significant benefit both to OSFI and to a company's stakeholders by contributing to the safety and soundness of insurance companies, as described in the general objectives below. In addition, regular peer review is also of benefit to the AA by providing a source of independent advice and a means of consulting with other knowledgeable actuaries. Consequently, OSFI expects that all federally regulated insurance companies will appoint peer reviewers to implement peer review processes consistent with the OSFI criteria described below. The peer review should be conducted in accordance with accepted actuarial practice as specified in the CIA's *Standards of Practice*, in particular with section 1530 of these standards and any related educational notes.

b. General Objectives

In requiring peer review of the work of the AA, OSFI has the following objectives:

- assist OSFI in its assessment of the insurer's safety and soundness: The AA has the responsibility for the valuation of policy liabilities in the financial statements and future financial condition reporting. Actuarial peer review is one tool OSFI uses in its assessment of the safety and soundness of insurers.
- be of benefit to the AA by providing (i) a source of independent consultation advice, and (ii) an additional source of professional education: This aids in narrowing the range of practice by AA's and improving the quality of their work. OSFI recognizes that this is not the only source of professional development for the AA.
- maintain and strengthen confidence in the work of the AA by the public, by insurance company management and directors and by supervisory authorities.

It is OSFI's intention to periodically meet with the peer reviewer to discuss the report and the findings of a review. It is also OSFI's intention to periodically meet with the AA to discuss the value being obtained by the peer review process.

c. Work to be Reviewed

In order to assist in achieving OSFI's objective to assess insurers' safety and soundness, the reviewer is expected to:

1. ascertain that the work of the AA for the valuation of policy liabilities and ceded reinsurance assets is in compliance with accepted actuarial practice, as established by the Actuarial Standards Board and the CIA, and is consistent with any objectives or requirements established by OSFI in Regulations, Guidelines or the Memorandum to the AA (Note that the peer review work is not intended to duplicate the work of the external auditor. See Section 3d below.);

2. review the appropriateness and extent of internal and external material changes affecting the valuation of policy liabilities and ceded reinsurance assets. The reviewer should assess the risk of material misstatement or omissions arising from each change, as opposed to just the net effect of off-setting changes.
3. review the adequacy of procedures, systems and the work of others relied on by the AA, to the extent that these are not reviewed by the external auditor. This includes checks on data integrity and checks on procedures and methodologies used to validate the valuation calculations and results;
4. discuss with the AA the appropriateness of each of the assumptions used and the methods employed in the valuation of actuarial policy liabilities and ascertain that the assumptions are at the appropriate point in the range of accepted actuarial practice, given the circumstances of the company;
5. determine whether the Appointed Actuary's Report (AAR) sufficiently describes the valuation assumptions and valuation methodology employed by the AA;
6. for life insurance companies' LICAT/LIMAT returns, and for P&C companies' MCT/BAAT returns, and additionally, for mortgage insurance companies' MICAT returns, review the work of the AA in the areas that require actuarial assumptions and calculations and ensure the work is consistent with the report, if any, accompanying these filings;
7. review and discuss with the AA the methodology, assumptions and scenarios used for future financial condition reporting as required by the Superintendent in Section 1 of this Guideline, usually based on Dynamic Capital Adequacy Testing (DCAT); and
8. produce a written report(s) documenting the findings of the peer review.

The AA and management of the company should co-operate fully with the peer reviewer when the review is being carried out. Best efforts should be used to provide the reviewer with access to any required documents and to provide any additional explanations that may be relevant to the peer review.

Examples of material changes referenced in point 2 above include, but are not limited to:

- changes in key actuarial valuation assumptions or unusual adverse or favourable loss development;
- changes in methodology used in the valuation;
- changes in company operations or circumstances (e.g. acquisitions, investment policy, etc.);
- use of a revised valuation model (e.g. the review should cover general methodology, but does not need to be a full software audit or a recalculation.);
- material events that would suggest that valuation assumptions or methods may need to be modified (e.g. fundamental economic changes, changes in corporate legal structure, taxation law changes, material new line of business, etc.). For such events, a review should also be included of the valuation assumptions and methods for material blocks of

business that are subject to high sensitivity, but where no changes have been made.

d. Materiality Considerations

The materiality level used for a company's financial statements is set by the external auditor based on the size of the company as a whole. For the purpose of peer review, both the reviewer and the AA should follow the description of materiality as contained in the CIA standards of practice. This requires materiality to be set from the point of view of the prime user of the work. As such, OSFI expects the materiality level for peer review to be appropriate at the line of business level at which the assumptions are set.

Materiality is a matter of professional judgement in the particular circumstances. While auditors may determine quantitative materiality for audit purposes at the total company level, materiality for the purposes of peer review cannot be determined solely by means of the application of a numeric threshold. General quantitative guidelines are not a substitute for the AA's and peer reviewer's professional judgement.

Materiality should become more rigorous as the company approaches any internal capital targets or regulatory capital thresholds.

e. Peer Review and External Audit

The Canadian Institute of Chartered Accountants (CICA) and the Canadian Institute of Actuaries (CIA) have issued a paper entitled *Guide: Audits of Financial Statements That Contain Amounts That Have Been Determined Using Actuarial Calculations* (the CICA Guide). This paper provides guidance to external auditors for applying the requirements of the Canadian Auditing Standards (CASs). These standards state that the overall objective of the auditor is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement.

However, OSFI's objective and scope for peer review is to assess the safety and soundness of insurers by reviewing the AA's work for the financial statements at a more granular level. It is OSFI's view that each of the assumptions used should be independently reasonable, in accord with accepted actuarial standards, and that the methodology should be appropriate for each valuation model. OSFI expects the peer reviewer to express an opinion on the appropriateness of the policy liabilities at this more granular level and to provide feedback to the AA on the various aspects of their work. Therefore, since the objective of an external audit differs from the objective of a peer review, the audit work done to satisfy the audit requirements may not be sufficient to fully address the peer review requirements under this Guideline.

It is not OSFI's intention that the requirements for the peer review work duplicate the work of the external auditor, including any actuary assisting the auditor. The peer reviewer is not required to perform any detailed recalculations, as long as the reviewer determines that the controls and procedures used by the AA are adequate to identify potential errors in the valuation results. The peer reviewer is also not required to verify data or controls.

Where the auditor's actuarial specialist on the engagement team is not an FCIA, the peer reviewer should take extra care to verify that all CIA standards are met by the AA.

f. Contents of Peer Review Reports

OSFI expects the peer reviewer to prepare a report documenting the findings of the reviews.

In the case of a Canadian or provincial insurance company, the peer reviewer's written report, or a summary of it, is expected to be submitted to the audit committee of the company's board of directors at the meeting subsequent to the completion of the report. In the case of a Canadian branch of a foreign insurance company, the report is to be submitted to the Chief Agent. In both cases, the full report and any summary report are to be submitted to OSFI.

The full peer review written report should include the following:

- a description of the work done by the reviewer (both the specifics of the work and its extent);
- the timing during the year when the work was carried out;
- the materiality level used for the review;
- the reviewer's statement of opinion with respect to the AA's compliance with accepted actuarial practice and any objectives or requirements established by OSFI in Regulations, Guidelines or Memoranda to the AA;
- the reviewer's observations with respect to changes made in methodology and assumptions;
- the reviewer's acknowledgement that no additional material changes should have been made;
- a list of any recommendations for further review or work by the AA in the coming year; and
- a brief description of the relationship with the AA to support the specific objectives of providing consultation aid, professional education and improving the quality of the AA's work.

g. Peer Review Cycle

Each item of the AA's work described in subsection 3(c) above dealing with the financial statements should be reviewed and reported on at least once every three years, either all at once or in phases over a three-year cycle.

However, OSFI expects material changes (see subsection 3.c.2), if any, affecting the valuation of policy liabilities or ceded reinsurance assets to be reviewed and reported on annually. If there are no material changes, and the reviewer is in agreement that this is appropriate, the reviewer should still prepare and file a brief report to that effect.

A full review of the financial condition reporting (subsection 3.c.7) is expected to be prepared every three years. A limited annual review is only required to address the appropriateness of the scenarios employed. The peer reviewer is expected to prepare reports documenting the findings of both the full 3-year review and the limited annual review.

h. Timing of the Peer Review Work and Reports

Due to the separate timing during the year of the AA's work for a company's financial statements and for financial condition reporting, there can be more than one report.

With regard to the financial statement related work (items c.1, c.2, c.3, c.4 and c.6 above), OSFI encourages the peer review to be pre-release (i.e. carried out prior to the release of the AA reporting on the statement related work).

The review of the AAR (item c.5 above) can be post-release.

The review of the future financial condition reports is also encouraged to be pre-release, but may be post-release depending on the circumstances of the company.

To qualify as a pre-release peer review, the reviewer must prepare the report and sign his/her opinion on, or shortly before, the date the AA reports on any work. For example, the filing of the Life-1, Life-2, P&C-1 or P&C-2 statements with OSFI is deemed to be AA reporting. For a pre-release peer review of work subject to external audit, the peer review report should be submitted to the audit committee or to the Chief Agent on, or shortly before, the date the AA reports on any work.

The complete peer review reports, and any summaries, are expected to be submitted to OSFI on a confidential basis. Copies of pre-release reports, both the full peer review report, and any summary, for financial statement work should be forwarded to OSFI based on the same deadlines that apply to filings of the Life-1, Life-2, P&C-1 or P&C-2 reports. For post-release reviews, the reviewer's report should be submitted to OSFI no later than thirty days after release of the AA's report on the work reviewed, and for future financial condition reports, no later than December 31.

If a member or employee of the insurer's external audit firm peer reviews work by the AA that is subject to audit, OSFI expects that such a peer review will be completed prior to the issuance of the audit opinion.

i. Selecting a Reviewer

OSFI expects each company to hire a single peer reviewer for the company as a whole. If there are affiliate or subsidiary companies within one group, a single peer reviewer should be responsible for assessment of the entire group of companies, including the preparation of the peer review reports and opinions. The reviewer may, however, engage other sub-reviewers to

take advantage of particular competencies.

A peer reviewer is expected to meet the same qualification standards as are outlined in Section 2 of this Guideline with respect to the AA, including the Superintendent's minimum requirements for suitability.

It is good practice for the audit committee of the company's board of directors, or the chief agent in the case of a foreign company, to be advised of the terms of the peer review and the selection of the reviewer before the review is undertaken.

OSFI expects a reviewer to have sufficient experience with respect to the type of work to be reviewed. The reviewer's prior experience should include exposure to two or more unrelated insurance companies in order that the reviewer be familiar with the range of practices and assumptions used by actuaries in Canada. Knowledge of industry best practices is needed to ensure the review process appropriately fulfils its educational and consultative objectives.

OSFI expects a company to notify it in writing forthwith after hiring the peer reviewer, and to provide the reasons for any change in reviewer.

It is essential to the integrity of the peer review process that a reviewer be, and be seen to be, objective. The reviewer should, therefore, have no relationship with the insurer or with the AA that would in any way impair objectivity. The reviewer is expected to follow the CIA *Standards of Practice* as well as any additional OSFI requirements. In practice, without limiting the generality of the foregoing, OSFI believes that the following criteria should be applied in determining the objectivity of a reviewer:

- A reviewer may not be an employee of the company or any affiliated companies, and may not have been employed by the company or served as AA of the company during the three years prior to the date of the work being reviewed;
- A reviewer must not be a shareholder of, or have a direct financial investment (other than as a policyholder, depositor, beneficiary or insured) in the company;
- A reviewer may have an indirect interest (e.g. through a diversified mutual fund investment) in the company;
- If a member of a consulting firm is the AA, another member of the same firm may not be the peer reviewer;
- If a member of a consulting firm is involved in any actuarial work related to the financial statements or financial condition reporting for the company, another member of the same firm may be the peer reviewer only if he/she is not involved in this work for the company. In this context, "actuarial work" includes deciding on methodology, selecting assumptions and producing results.
- It is acceptable, and in fact expected, that the AA will be in contact with the peer reviewer during the course of the year to discuss the potential acceptability of changes in methodologies and assumptions that the AA is considering. However, the reviewer

should only provide advice with respect to these changes as part of the peer review work. This is similar to the interaction of a company with its external auditor.

- A peer reviewer may be an actuary working in the company's external audit firm, but companies are encouraged to not use as a peer reviewer an actuarial specialist who is a member of the audit team for the company.

OSFI regards an actuary working for the external audit firm to be sufficiently independent to be a peer reviewer. Using an actuary from the external audit firm can accommodate smaller and simpler companies. Notwithstanding this, OSFI expects large and complex companies to engage a peer reviewer who is not a member of its external audit firm. While OSFI recognizes that external audit firms are independent, it is of the view that a separate independent actuarial peer review is desirable since it will give additional perspective to large and complex companies.

However, as noted in subsection 3(h), if an actuary in the external audit firm's actuary is used for peer review, the peer review of any work that is subject to audit should be completed prior to the issuance of the audit opinion. In addition, this peer review work should be performed under a stand-alone engagement that is separate from the audit engagement.

Note that the criteria for objectivity for peer review purposes are not as restrictive as those found in OSFI's Guideline E-14, *Role of the Independent Actuary* (i.e., rules required for amalgamations of companies or buying/selling of blocks of business). In the latter case, the Independent Actuary represents, in the transaction, policyholders who rely on the Independent Actuary. In the case of peer review, OSFI, policyholders, management and shareholders continue to depend on the AA.

j. Changing a Reviewer

To enhance the peer reviewer's objectivity and increase the educational value of the review process, a regular change or rotation of reviewers is expected. This allows the AA to obtain different perspectives. Therefore, OSFI expects that a reviewer will be changed at least once every two cycles (i.e., every six years). However, the company has the option of making more frequent changes.

If a peer reviewer is a member of a consulting or audit firm, another member of the same firm may be acceptable as a new peer reviewer. In this case, a previous reviewer may be reappointed to this role after a period of at least one cycle (i.e., at least three years).

When a company changes its peer reviewer, it should notify OSFI in writing forthwith stating the reasons for the change.

- END -

Office of the Superintendent of Financial Institutions Canada
Bureau du surintendant des institutions financières Canada

Guideline

Subject: **Stress Testing**

Category: **Sound Business and Financial Practices**

No: **E-18** **Date: December 2009**

Stress testing is an important tool for senior management to use in making business strategy, risk management and capital management decisions. This guideline sets out OSFI's expectations with respect to stress testing and applies to banks and bank holding companies, and to all federally regulated trust and loan companies, cooperative credit associations, life insurance companies and fraternal benefit societies, property and casualty insurance companies and insurance holding companies (collectively referred to as "institutions").

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A. Stress Testing Defined

Stress testing is a risk management technique used to evaluate the potential effects on an institution's financial condition, of a set of specified changes in risk factors, corresponding to exceptional but plausible events[1]. Stress testing includes scenario testing and sensitivity testing (refer to Glossary).

Stress testing is especially important after long periods of benign economic and financial conditions, when fading memory of negative conditions can lead to complacency and the underpricing of risk. It is also a key risk management tool during periods of expansion, when innovation leads to new products that grow rapidly and for which limited or no historical experience is available.

Stress testing attempts to determine the impact of situations where the assumptions underlying established models used in managing a business break down. This applies equally to valuation models, models of individual risks and models that aggregate individual risks.

B. Purposes of Stress Testing

Stress testing should be embedded in enterprise wide risk management. A stress testing program as a whole should be actionable, playing an important role in facilitating the development of risk mitigation or contingency plans across a range of stressed conditions. It should feed into the institution's decision making process, including setting the institution's risk appetite, setting exposure limits, and evaluating strategic choices in longer term business planning.

An institution's stress testing program should serve the following purposes:

i. **Risk identification and control** – Stress testing should be included in an institution's risk management activities at various levels, for example, ranging from risk mitigation policies at a detailed or portfolio level to adjusting the institution's business strategy. In particular, it should be used to address institution-wide risks, and consider the concentrations and interactions between risks in stress environments that might otherwise be overlooked.

ii. **Providing a complementary risk perspective to other risk management tools** – Stress tests should complement risk quantification methodologies that are based on complex, quantitative models using backward looking data and estimated statistical relationships. In particular, stress testing outcomes for a particular portfolio can provide insights about the validity of statistical models at high confidence intervals, for example those used to determine VaR.

    As stress testing allows for the simulation of shocks which have not previously occurred, it should be used to assess the robustness of models to possible changes in the economic and financial environment. Stress tests should help to detect

[1] *Stress Testing by Large Financial Institutions: Current Practice and Aggregation Issues*, Committee on the Global Financial System, April 2000

vulnerabilities such as unidentified risk concentrations or potential interactions between types of risk that could threaten the viability of the institution, but may be concealed when relying purely on statistical risk management tools based on historical data.

Stress testing can also be used to assess the impacts of customer behaviour arising from options embedded in certain products – particularly where the impact is not easily modelled under extreme events.

iii. **Supporting capital management –** Stress testing should form an integral part of institutions' internal capital management where rigorous, forward-looking stress testing can identify severe events, including a series of compounding events, or changes in market conditions that could adversely impact the institution.

iv. **Improving liquidity management** – Stress testing should be a central tool in identifying, measuring and controlling funding liquidity risks, in particular for assessing the institution's liquidity profile and the adequacy of liquidity buffers in case of both institution-specific and market-wide stress events.

C. Role of Senior Management

Senior management (including, in the case of foreign insurance or bank branches, the Chief Agent or Principal Officer, respectively, and an appropriate senior official from the branch's home office) involvement in the stress testing program is essential for its effective operation. Senior management is accountable for the program's implementation, management and oversight and for ensuring that the institution has adequate plans to deal with remote but plausible stress scenarios.

Senior management must ensure there is a "fit for purpose" program in place that is enterprise wide and that operational management has adopted policies requiring appropriate use of stress testing as a management tool.

Senior management should be able to identify and clearly articulate the institution's risk appetite and understand the impact of stress events on the risk profile of the institution. Senior management must participate in the review and identification of potential stress scenarios, as well as contribute to the development and implementation of risk mitigation strategies. In addition, senior management should consider an appropriate number of well-understood, documented, utilised and sufficiently severe scenarios that are relevant to their institution. Senior management's endorsement of stress testing as a guide in decision-making is particularly valuable when the tests reveal vulnerabilities that the institution finds costly to address or difficult to resolve in a timely, appropriate and realistic manner.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of institution Boards of Directors in regards to operational, business, risk and crisis management policies.

D. General Considerations for Stress Testing Programs

Stress testing programs should take account of views from across the organisation and should cover a range of perspectives and techniques.

The identification of relevant stress events, the application of sound modelling approaches and the appropriate use of stress testing results each require the collaboration of different senior experts such as risk controllers, economists, business managers, traders and actuaries. Institutions should also use a range of techniques in order to achieve comprehensive coverage in their stress testing program, including quantitative and qualitative techniques to support and complement models and to extend stress testing to areas where effective risk management requires greater use of judgement.

Institutions should have written policies and procedures governing the stress testing program. The operation of the program should be appropriately documented.

The assumptions and fundamental elements for each stress testing exercise should be appropriately documented, including the reasoning and judgements underlying the scenarios chosen and the sensitivity of stress testing results to the range and severity of the scenarios. The level of documentation should be based on the nature and purposes of the stress testing. For example, documentation of ad hoc sensitivity tests for tactical decisions may be less elaborate than the documentation of enterprise-wide stress tests used for strategic decision making. An evaluation of fundamental assumptions should be performed regularly or in light of changing external conditions. The results of the assessments should also be documented.

An institution should have a suitably robust infrastructure in place, which is sufficiently flexible to accommodate different and possibly changing stress tests at an appropriate level of granularity.

The infrastructure should be able to aggregate comparable risks and exposures across the institution. It should allow for reporting to senior management in a timely manner throughout the fiscal year. The infrastructure and information systems should be sufficiently flexible to accommodate a timely increase in the frequency of ad hoc sensitivity testing to support senior management's response to rapid changes in the operating environment and also for purposes of responding to the concerns of external stakeholders and regulators.

An institution's stress testing infrastructure and information systems should be commensurate with the nature and complexity of the institution and its risk profile. For example, greater risk factor volatility and shorter time horizons for management actions require infrastructure and information systems that accommodate more frequent stress testing in those areas.

An institution should regularly maintain and update its stress testing framework. The effectiveness of the stress testing program, as well as the robustness of individual components, should be assessed regularly and independently.

Assessments of effectiveness should be qualitative as well as quantitative, given the

importance of judgments and the severity of shocks considered. Areas for assessment should include effectiveness of the program in meeting its intended purposes, documentation, development work, system implementation, management oversight, data quality and hypotheses and assumptions used.

Since the stress test development and maintenance processes often imply judgmental and expert decisions (e.g. assumptions to be tested, calibration of the stress, etc.), the independent control functions such as risk management and internal audit should also play a key role in the process. In particular there should be an independent review (e.g., by internal audit) of the adequacy of the design and effectiveness of the operations of an institution's stress testing programs.

E. Methodology and Scenario Selection

Stress tests should cover a range of risks and business areas, as well as at the institution-wide level. An institution should be able to integrate effectively, in a meaningful fashion, across the range of its stress testing activities to deliver a complete picture of institution-wide risk.

A stress testing program should consistently and comprehensively cover product-, business- and entity-specific views. Using a level of granularity appropriate to the purpose of the stress test, stress testing programs should examine the effect of shocks across all relevant risk factors, taking into account interrelations among them.

Comprehensive stress testing programs should consider the institution's most material and significant risks. Where relevant and material, such risks may include:

- *credit risk, including counterparty and reinsurance risk*
- *market risk, e.g.,*
  - *general market*
  - *specific*
  - *cash flow mismatch*
  - *interest rate*
  - *foreign exchange*
  - *commodity*
- *insurance risk, e.g.,*
  - *mortality*
  - *morbidity*
  - *claim frequency and severity*
  - *persistency and lapse risk*
- *liquidity risk*

- *operational and legal risk*
- *concentration risk*
- *contagion risk*
- *risk to reputation*
- *securitization risk*
- *new business risk*
- *regulatory risk*
- *inflation risk*

The impact of stress tests is usually evaluated using one or more measures. The particular measures used will depend on the specific purpose of the stress test, the risks and portfolios being analysed and the particular issue under examination. A range of measures may need to be considered to convey an adequate impression of the impact. Typical measures used are:

- asset and liability values
- level of impaired assets and write-offs
- accounting profit and loss
- economic profit and loss
- required and available regulatory capital
- economic capital
- liquidity and funding gaps

Stress testing programs should apply across business and product lines and cover a range of scenarios, including non-historical scenarios, and aim to take into account system-wide interactions and feedback effects (e.g., second order and macroeconomic effects).

Stress tests should be conducted flexibly and imaginatively, in order to improve the likelihood of identifying hidden vulnerabilities. A "failure of imagination" could lead to an underestimation of the likelihood and severity of extreme events and to a false sense of security about an institution's resilience.

The institution should assess the impact of severe shocks and periods of severe and sustained downturns, including its ability to react over the time horizon appropriate for the business and risks being tested.

Institutions should use stress tests to identify, monitor and control risk concentrations. To adequately address risk concentrations, the scenario should to be firm-wide and comprehensive, covering balance sheet and off-balance sheet assets, contingent and non-

contingent risks, and should give due consideration to actions beyond contractual obligations that might be undertaken to preserve reputation. Further, stress tests should identify and respond to potential changes in market conditions that could adversely impact an institution's exposure to risk concentrations.

Stress tests should feature a range of severities, including events capable of generating the most damage, whether through size of loss or through loss of reputation. A stress testing program should also determine what scenarios could challenge the viability of the institution (reverse stress tests). Such tests may be useful in uncovering hidden risks and interactions among risks.

Stress tests should be geared towards events and business areas that might be particularly damaging for the institution. Areas which benefit in particular from the use of stress testing are business lines where traditional risk management models indicate an exceptionally good risk/return trade-off; new products and new markets which have not experienced severe strains; and exposures where there are no liquid two way markets.

Institutions should conduct reverse stress tests. A reverse stress test starts with a specified outcome that challenges the viability of the firm. One example of such an outcome would be that over a short time period, the firm incurs a very large loss that challenges its viability. The analysis would then work backward (reverse engineered) to identify a scenario or combination of scenarios that could bring about such a specified outcome. The reverse stress test induces institutions to consider scenarios beyond normal business settings that would include events with contagion and systemic implications.

As part of an overall stress testing program, a deposit-taking institution should aim to take account of simultaneous pressures in funding and asset markets, and the impact of a reduction in market liquidity on asset valuation. Funding and asset markets may be strongly interrelated, particularly during periods of stress. An institution should enhance its stress testing practices by considering important interrelations between various factors, including price shocks for specific asset categories; the drying-up of corresponding asset liquidity; the possibility of significant losses damaging the institution's financial strength; growth of liquidity needs as a consequence of liquidity commitments; taking on board affected assets; and diminished access to secured or unsecured funding markets.[2]

As part of an overall stress testing program at an insurance company, specific consideration should be given to important interrelations between various risk factors. For a life insurer, changes in economic conditions can significantly affect policyholder behaviour such as lapse rates, utilization of options within an insurance contract, and morbidity and recovery rates. For a property and casualty insurer, changing economic conditions will not only influence investment income and company expenses, but can also, particularly in times of inflation, lead to higher claims and loss reserves. The interrelations of various factors will depend upon the insurer's products, its investment policy and its approach to managing its business. A critical goal for insurers is to identify

[2] See also *Principles for Sound Liquidity Risk Management and Supervision*, Basel Committee on Banking Supervision (September 2008).

situations in which the assumed normal pattern of interrelationships breaks down due to a change in the business environment.

F. Specific Areas of Focus

The following risks have proven to require specific attention in light of experience of financial market turmoil:

- Risk Mitigation
- Securitization and Warehousing Risks
- Risks to Reputation
- Counterparty Credit Risk
- Risk Concentrations

As such, stress testing should be prominent among the risk assessment tools used where these specific risks are material.

Risk Mitigation

Stress testing should facilitate the development of risk mitigation or contingency plans across a range of stressed conditions. The performance of risk mitigating techniques, like reinsurance, hedging, netting and the use of collateral, should be challenged and assessed systematically under stressed conditions when markets may not be fully functioning and multiple institutions simultaneously could be pursuing similar risk mitigating strategies. Stress testing should also reflect constraints on management action and should not place undue reliance on the timeliness of mitigating actions.

Securitization and Warehousing Risks

The stress testing program should explicitly cover complex and customized products such as securitized exposures. Stress tests for securitized assets should consider the underlying assets, their exposure to systemic market factors, relevant contractual arrangements and embedded triggers, and the impact of leverage, particularly as it relates to the subordination level in the issue structure.

The stress testing program should cover pipeline and warehousing risks. These are market, credit and funding risks arising in the period prior to securitization or sale and which may arise from the need to hold assets for longer periods than originally planned when markets are disrupted. An institution should include such exposures in its stress tests regardless of their probability of being securitized. Many of the risks associated with pipeline and warehoused exposures emerge when an institution is unable to access the securitization or other markets due to either institution specific or market stresses.

Risks to Reputation

An institution should enhance its stress testing methodologies to capture the effect of risks to reputation. To mitigate reputational spill-over effects and maintain market confidence, an institution should have an approach to assess the impact of risks to reputation on other risk types.

The institution should integrate risks arising from off-balance sheet vehicles and other related entities in its stress testing program. An institution should carefully assess the risks associated with commitments to off-balance sheet vehicles related to structured credit securities and the possibility that assets will need to be taken on balance sheet for reputational reasons. Therefore, in its stress testing program, an institution should include scenarios assessing the size and soundness of such vehicles relative to its own financial, liquidity and regulatory capital positions. This analysis should include structural, solvency, liquidity and other risk issues, including the effects of covenants and triggers.

Counterparty Credit risk

An institution may have large gross exposures to leveraged counterparties, including hedge funds, financial guarantors, investment banks and derivatives counterparties that may be particularly exposed to specific asset types and market movements. Under normal conditions, these exposures are typically completely secured by posted collateral and continuous re-margining agreements yielding zero or very small net exposures. In the case of severe market shocks, however, these exposures may increase abruptly. The potential cross-correlation of the creditworthiness of derivative counterparties with the risks of the reference assets may emerge (i.e., wrong-way risk). An institution should ensure that its stress testing approaches related to derivative counterparties are robust in their capture of such correlated tail risks.

Risk Concentrations

Stress testing should consider risk concentrations resulting directly from risk taking activities as well as those resulting indirectly from actions to mitigate risks, e.g., concentrations of credit counterparty risk arising from hedges of market and insurance risk.

Risk concentrations may arise along different dimensions:

- single name concentrations
- concentrations in regions or industries
- concentrations in single risk factors
- concentrations in indirect exposures via posted collateral or hedge positions
- concentrations in off-balance sheet exposure, contingent exposure or non-contractual obligations by reputational reasons

In addition, concentrations may arise based on correlated risk factors that reflect subtler or more situation-specific factors, such as previously undetected correlations between market and credit risks, as well as between those risks and liquidity risk.

G. Supervisory Considerations

OSFI reviews institutions' stress testing programs as part of the supervisory review process as described in the Supervisory Framework, and as part of its review of a deposit-taking institution's Internal Capital Adequacy Assessment Process (ICAAP). For insurers, one example of stress testing is Dynamic Capital Adequacy Testing (DCAT). OSFI expects to see evidence that stress testing is integrated into institutions' internal risk management processes.

OSFI uses the results of institutions' stress testing programs as important information and integrates the results into its assessment of the inherent risks and risk controls and oversight of institutions' business activities

In assessing institutions' stress testing programs, OSFI may:

i. Evaluate whether scenarios chosen are consistent with the risk appetite the institution has set for itself.

ii. Assess whether scenarios are appropriate to the portfolio of the institution and that they include severe shocks and periods of severe and sustained downturn. The scenarios chosen should also include, where relevant, an episode of market turbulence or a shock to market liquidity.

iii. Assess whether the frequency and timing of stress testing is sufficient to support timely management action. For example, stress testing and DCAT are complementary initiatives. More frequent stress testing at the business unit level facilitates timely reaction to sudden market developments. It also supports the integration of the DCAT process with the finalization of an annual business plan by providing timely inputs based on current information. While it is up to each institution to determine how to best integrate DCAT and other stress testing into its business planning process to achieve the maximum benefits, ideally the annual DCAT of an insurance company would be available to the Board of Directors, Principal Officer or Chief Agent as soon as is reasonably possible; in all cases the annual DCAT should be submitted to OSFI within 30 days of its presentation to the Board of Directors, Principal Officer or Chief Agent.

iv. Ask institutions to evaluate scenarios under which viability is compromised and may ask institutions to test scenarios specific to different lines of business, to assess the plausibility of events that could materialize in significant strategic or reputational risk, in particular for business lines with significant balance sheet exposures.

v. Ask institutions, from time to time, to carry out standardized:

   - sensitivity tests for individual businesses/products given evolving market conditions or

- scenario tests for use by OSFI to assess system wide vulnerabilities.

vi. Examine the future capital resources and capital requirements under adverse scenarios. In particular, OSFI would consider the results of forward-looking stress testing for assessing the adequacy of capital buffers.

vii. Take account of the extent to which capital might not be freely transferable within groups under adverse scenarios. OSFI would also consider the possibility a crisis impairs the ability of even very healthy institutions to raise funds at reasonable cost.

viii. Review the range of management actions envisaged by institutions in response to the results of the stress testing exercise and be able to understand the rationale for the management body decision to take or not to take remedial actions. Supervisors may challenge whether such actions will be available in a period of stress and whether the institution will realistically be able and willing to take such actions.

ix. Make recommendations to an institution to take appropriate remedial action to address weaknesses in its stress testing program.

From time to time, OSFI may conduct an analysis of the impact of system-wide stress scenarios. OSFI intends as much as possible to test the impact of these system-wide scenarios using information that is reported in regulatory returns or regularly collected as part of the supervisory review process in order to minimize data calls on institutions.

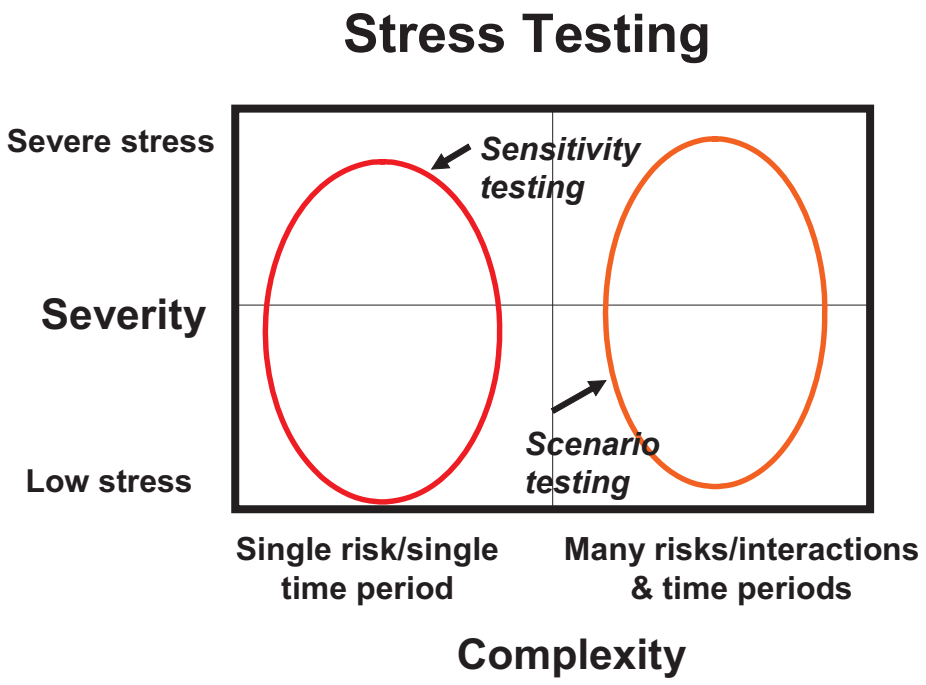
Glossary

Scenario testing:

Scenario testing uses a hypothetical future state of the world to define changes in risk factors affecting an institution's operations. This will normally involve changes in a number of risk factors, as well as ripple effects that are other impacts that follow logically from these changes and related management and regulatory actions. Scenario testing is typically conducted over the time horizon appropriate for the business and risks being tested.

Sensitivity testing:

Sensitivity testing typically involves an incremental change in a risk factor (or a limited number of risk factors). It is typically conducted over a shorter time horizon, for example an instantaneous shock. Sensitivity testing requires fewer resources than scenario testing and can be used as a simpler technique for assessing the impact of a change in risks when a quick response or when more frequent results are needed.



Guideline

Subject: **Minimum Capital Test**
For Federally Regulated Property and Casualty Insurance Companies

No: **A** **Effective Date:** **January 1, 2019**

Subsection 515(1) of the *Insurance Companies Act (ICA)* requires Federally Regulated Property and Casualty Insurance Companies (property and casualty companies) to maintain adequate capital. Subsection 608(1) of the *ICA* requires foreign property and casualty companies operating in Canada on a branch basis (foreign property and casualty companies) to maintain an adequate margin of assets in Canada over liabilities in Canada. The Minimum Capital Test (MCT) Guideline is not made pursuant to subsections 515(2) and 608(3) of the *Act*. However, the minimum and supervisory target capital standards set out in this guideline provide the framework within which the Superintendent assesses whether a property and casualty company maintains adequate capital pursuant to subsection 515(1) and whether a foreign property and casualty company maintains an adequate margin pursuant to subsection 608(1). Notwithstanding that a property and casualty company may meet these standards, the Superintendent may direct the property and casualty company to increase its capital under subsection 515(3) or the foreign property and casualty company to increase the margin of assets in Canada over liabilities in Canada under subsection 608(4).

This guideline outlines the capital framework, using a risk-based formula, for target and minimum capital/margin required, and defines the capital/assets that are available to meet the minimum standard. The MCT determines the minimum capital/margin required and not the level of capital/margin required at which property and casualty companies must operate.

Foreign property and casualty companies are reminded that the MCT is only one element in the determination of the required assets that must be maintained in Canada by foreign property and casualty companies. Foreign property and casualty companies must vest assets in accordance with the Adequacy of Assets in Canada test as prescribed in the *Assets (Foreign Companies) Regulations.*

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Chapter 1. Overview and General Requirements

The Minimum Capital Test (MCT) Guideline applies to Canadian property and casualty insurance companies and foreign property and casualty companies operating in Canada on a branch basis, collectively referred to as P&C insurers. Chapter 3 of this guideline, *Foreign Companies Operating in Canada on a Branch Basis,* defines assets available for foreign property and casualty companies operating in Canada on a branch basis (foreign companies). The MCT Guideline uses generic expressions that are meant to apply to both Canadian P&C insurers and foreign companies; e.g., capital available also refers to assets available for Branch Adequacy of Assets Test (BAAT) purposes, capital required refers to margin required for BAAT purposes and capital adequacy refers to margin adequacy for BAAT purposes.

This chapter provides an overview of the MCT Guideline and sets out general requirements. More detailed information on specific components of the capital test is contained under subsequent chapters.

Further guidance concerning some of the requirements of the MCT Guideline may be found in other guidelines and advisories available on OSFI's website under the Property and Casualty Insurance Companies section.

- Table of OSFI Guidelines
- Guidelines and Related Advisories – Capital
- Regulatory and Legislative Advisories

1.1. Overview

1.1.1. Minimum and target capital requirements under the MCT

Under the MCT, regulatory capital requirements for various risks are set directly at a pre-determined target confidence level. OSFI has elected 99% of the expected shortfall (conditional tail expectation or CTE 99%) over a one-year time horizon as a target confidence level.[1]

The risk factors defined in this guideline are used to compute capital requirements at the target level. The resulting MCT capital requirements are then divided by 1.5 to derive the minimum capital requirements. The MCT ratio is expressed as the capital available over the minimum capital required.

1.1.2. Risk-based capital adequacy

P&C insurers are required to meet the MCT capital requirements at all times. The definition of capital available to be used for this purpose is described in chapter 2 and includes qualifying criteria for capital instruments, capital composition limits, and regulatory adjustments and

[1] As an alternative, a value at risk (VaR) at 99.5% confidence level or expert judgement was used when it was not practical to use the CTE approach.

deductions. The definition encompasses capital available within all subsidiaries that are consolidated for the purpose of calculating the MCT ratio.

P&C insurers' minimum capital requirements are calculated on a consolidated basis and determined as the sum of the capital requirements at the target level for each risk component, less the diversification credit, divided by 1.5.

The minimum capital requirements are calculated as follows:

Sum of:

i.) Capital required for insurance risk (reference chapter 4):
   a. Capital required for unpaid claims and premium liabilities;
   b. Margin required for reinsurance ceded to unregistered reinsurers;
   c. Catastrophe reserves.

ii.) Capital required for market risk (reference chapter 5):
   a. Capital required for interest rate risk;
   b. Capital required for foreign exchange risk;
   c. Capital required for equity risk;
   d. Capital required for real estate risk;
   e. Capital required for other market risk exposures.

iii.) Capital required for credit risk (reference chapter 6):
   a. Capital required for counterparty default risk for balance sheet assets;
   b. Capital required for counterparty default risk for off-balance sheet exposures;
   c. Capital required for collateral held for unregistered reinsurance and self-insured retention (reference section 4.3.3).

iv.) Capital required for operational risk (reference chapter 7).

Less:

v.) Diversification credit (reference chapter 8).

Divided by 1.5.

1.1.3. Scope of consolidation

The capital adequacy requirements apply on a consolidated basis. The consolidated entity includes the P&C insurer and all of its directly or indirectly held subsidiaries, which carry on business that the parent could carry on directly in accordance with the *Insurance Companies Act* (ICA), including holding companies (e.g. P&C insurance and ancillary businesses such as agencies, brokerages and mutual funds). It therefore excludes:

- life insurance subsidiaries,

- other regulated financial institutions carrying on business that the parent would not be permitted to carry on directly under the *Insurance Companies Act* (ICA).

Whether a subsidiary should be consolidated is determined by the nature of the subsidiary's business (i.e. whether it carries on business related to P&C insurance), not the location where the subsidiary conducts its business (e.g. a U.S. P&C insurance subsidiary). All other interests in subsidiaries are considered "non-qualifying" for capital purposes and are excluded from capital available and capital required calculations.

1.1.4. Foreign companies

The margin requirement for foreign companies is set forth under the BAAT in chapter 3. The BAAT covers each of the risk components, and is determined using risk factors and other methods that are applied to assets under the control of the Superintendent, to specific assets under the control of the Chief Agent, and to liabilities in Canada.

The BAAT is only one element in the determination of the required assets that must be maintained in Canada by foreign companies. Foreign companies must vest assets in accordance with the Adequacy of Assets in Canada test, as prescribed in the *Assets (Foreign Companies) Regulations.*

1.1.5. Interpretation of results

The MCT is a standardized measure of capital adequacy of a P&C insurer. It is one of several indicators that OSFI uses to assess an insurer's financial condition and should not be used in isolation for ranking and rating insurers.

1.2. General Requirements

1.2.1. MCT supervisory capital ratio for federally regulated P&C insurers

The MCT ratio is expressed as a percentage and is calculated by dividing the P&C insurer's capital available by minimum capital required, which is derived from capital required calculated at the target level for specific risks.

Federally regulated P&C insurers are required, at a minimum, to maintain an MCT ratio of 100%. OSFI has established an industry-wide supervisory target capital ratio (supervisory target) of 150% that provides a cushion above the minimum requirement and facilitates OSFI's early intervention process. The supervisory target provides additional capacity to absorb unexpected losses and addresses capital needs through on-going market access.

OSFI expects each P&C insurer to establish an internal target capital ratio (internal target) per Guideline A-4 *Regulatory Capital and Internal Capital Targets*, and maintain on-going capital, above this target. However, the Superintendent may, on a case-by-case basis, establish an alternative supervisory target (in consultation with a P&C insurer) based upon the P&C insurer's individual risk profile.

P&C insurers are required to inform OSFI immediately if they anticipate falling below their internal target and to lay out their plans, for OSFI's supervisory approval, to return to their internal target. OSFI will consider any unusual conditions in the market environment when evaluating P&C insurers' performance against their internal targets.

P&C insurers are expected to maintain their MCT ratios at or above their established internal targets on a continuous basis. Questions about an individual P&C insurer's target ratio should be addressed to the Lead Supervisor at OSFI.

1.2.2. Audit requirement

P&C insurers are required to engage their auditor appointed pursuant to section 337 or 633 of the ICA to report annually on the MCT or BAAT prepared as at fiscal year-end, in accordance with the relevant standards for such assurance engagements, as promulgated by the Canadian Auditing and Assurance Standards Board (AASB).

The annual audit report of the MCT or BAAT must be prepared separately from the audit report for the financial statements, and is to be filed no later than 90 days after the P&C insurers' fiscal year-end. The annual audit opinion provided must be with respect to the current fiscal year-end, for page 30.61 of the P&C quarterly return.

Chapter 2. Definition of Capital Available

This chapter establishes requirements for the adequacy and appropriateness of capital resources used to meet capital requirements, having regard to their ability to meet P&C insurers' obligations to policyholders and creditors and to absorb losses in periods of stress. This includes the determination of the criteria for assessing the quality of capital components for inclusion in capital available and the composition of capital available for regulatory purposes, focussing on the predominance of highest quality capital.

2.1. Summary of Capital Components

The four primary considerations for defining the capital available of a company for the purpose of measuring capital adequacy are:

- availability: the extent to which the capital element is fully paid in and available to absorb losses;
- permanence: the period for, and extent to which, the capital element is available;
- absence of encumbrances and mandatory servicing costs: the extent to which the capital element is free from mandatory payments or encumbrances; and
- subordination: the extent to which and the circumstances under which the capital element is subordinated to the rights of policyholders and creditors of the insurer in an insolvency or winding-up.

Regulatory capital available will consist of the sum of the following components: common equity or category A capital, category B capital, and category C capital.

2.1.1. Category A capital (i.e. common equity)

- Common shares issued by the P&C insurer that meet the category A qualifying criteria as described below;
- Surplus (share premium) resulting from the issuance of instruments included in common equity capital and other contributed surplus[2];
- Retained earnings;
- Earthquake, nuclear and general contingency reserves; and
- Accumulated other comprehensive income.

Retained earnings and accumulated other comprehensive income include interim profit or loss. Dividends are removed from capital available in accordance with applicable accounting standards.

[2] Where repayment is subject to Superintendent's approval.

2.1.1.1. Qualifying criteria for inclusion of capital instruments in category A for regulatory capital purposes[3]

For an instrument to be included in capital available under category A, it must meet all of the following criteria:

1. Represents the most subordinated claim in liquidation of the insurer.
2. The investor is entitled to a claim on the residual assets that is proportional with its share of issued capital, after all senior claims have been paid in liquidation (i.e. has an unlimited and variable claim, not a fixed or capped claim).
3. The principal is perpetual and never repaid outside of liquidation (setting aside discretionary repurchases or other means of effectively reducing capital in a discretionary manner that is allowable under relevant law and subject to the prior approval of the Superintendent).
4. The insurer does not, in the sale or marketing of the instrument, create an expectation at issuance that the instrument will be bought back, redeemed or cancelled, nor do the statutory or contractual terms provide any feature that might give rise to such expectation.
5. Distributions are paid out of distributable items (retained earnings included). The level of distributions is not in any way tied or linked to the amount paid in at issuance and is not subject to a contractual cap (except to the extent that an insurer is unable to pay distributions that exceed the level of distributable items or to the extent that distribution on senior ranking capital must be paid first).
6. There are no circumstances under which the distributions are obligatory. Non-payment is, therefore, not an event of default.
7. Distributions are paid only after all legal and contractual obligations have been met and payments on more senior capital instruments have been made. This means that there are no preferential distributions, including in respect of other elements classified as the highest quality issued capital.
8. It is in the form of issued capital that takes the first and proportionately greatest share of any losses as they occur. Within the highest quality capital, each instrument absorbs losses on a going concern basis proportionately and *pari passu* with all the others.
9. The paid-in amount is recognized as equity capital (i.e. not recognized as a liability) for determining balance sheet solvency.
10. It is directly issued and paid-in[4] and the insurer cannot directly or indirectly have funded the purchase of the instrument. Where the consideration for the shares is other than cash, the issuance of the common shares is subject to the prior approval of the Superintendent.

[3] The criteria also apply to non-joint stock companies, such as mutuals, taking into account their specific constitution and legal structure. The application of the criteria should preserve the quality of the instruments by requiring that they are deemed fully equivalent to common shares in terms of their capital quality as regards loss absorption and do not possess features that could cause the condition of the insurer to be weakened as a going concern during periods of market stress.

11. The paid-in amount is neither secured nor covered by a guarantee of the issuer or related entity[5] or subject to any other arrangement that legally or economically enhances the seniority of the claim.
12. It is only issued with the approval of the owners of the issuing insurer, either given directly by the owners or, if permitted by applicable law, given by the Board of Directors or by other persons duly authorized by the owners.
13. It is clearly and separately disclosed on the insurer's balance sheet, prepared in accordance with the relevant accounting standards.

2.1.2. Category B capital

- Instruments issued by the institution that meet category B criteria and do not meet the criteria for classification as category A, subject to applicable limits;
- Surplus (share premium) resulting from the issuance of instruments meeting category B criteria.

2.1.2.1 Qualifying criteria for inclusion of capital instruments in category B for regulatory capital purposes

For an instrument to be included in capital available under category B, it must meet <u>all</u> of the following criteria:

1. Issued and paid-in in cash or, subject to the prior approval of the Superintendent, in property.
2. Subordinated to policyholders, general creditors and subordinated debt holders of the insurer.
3. Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis policyholders and creditors.[6]
4. Is perpetual, i.e. there is no maturity date and there are no step-ups[7] or other incentives to redeem[8]

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[4] Paid-in capital generally refers to capital that has been received with finality by the institution, is reliably valued, fully under the institution's control and does not directly or indirectly expose the institution to the credit risk of the investor.

[5] A related entity can include a parent company, a sister company, a subsidiary or any other affiliate. A holding company is a related entity irrespective of whether it forms part of the consolidated insurance group.

[6] Further, where an institution uses a special purpose vehicle to issue capital to investors and provides support, including overcollateralization, to the vehicle, such support would constitute enhancement in breach of criterion #3 above.

[7] A step-up is defined as a call option combined with a pre-set increase in the initial credit spread of the instrument at a future date over the initial dividend (or distribution) rate after taking into account any swap spread between the original reference index and the new reference index. Conversion from a fixed rate to a floating rate (or vice versa) in combination with a call option without any increase in credit spread would not constitute a step-up.

5. May be callable at the initiative of the issuer only after a minimum of five years:
    a. To exercise a call option, an insurer must receive prior approval of the Superintendent; and
    b. An insurer's actions and the terms of the instrument must not create an expectation that the call will be exercised; and
    c. An insurer must not exercise a call unless:
        i. It replaces the called instrument with capital of the same or better quality, including through an increase in retained earnings, and the replacement of this capital is done at conditions that are sustainable for the income capacity of the insurer[9]; or
        ii. The insurer demonstrates that its capital position is well above the supervisory target capital requirements after the call option is exercised.
6. Any repayment of principal (e.g. through repurchase or redemption) must require approval of the Superintendent and insurers should not assume or create market expectations that such approval will be given.
7. Dividend/coupon discretion:
    a. the insurer must have full discretion at all times to cancel distributions/payments;[10]
    b. cancellation of discretionary payments must not be an event of default or credit event;
    c. insurers must have full access to cancelled payments to meet obligations as they fall due;
    d. cancellation of distributions/payments must not impose restrictions on the insurer except in relation to distributions to common shareholders.
8. Dividends/coupons must be paid out of distributable items.
9. The instrument cannot have a credit sensitive dividend feature, i.e., a dividend/coupon that is reset periodically based in whole or in part on the insurance organization's credit standing.[11]

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[8] Other incentives to redeem include a call option combined with a requirement or an investor option to convert the instrument into common shares if the call is not exercised.

[9] Replacement issuances can be concurrent with, but not after, the instrument is called.

[10] A consequence of full discretion at all times to cancel distributions/payments is that "dividend pushers" are prohibited. An instrument with a dividend pusher obliges the issuing insurer to make a dividend/coupon payment on the instrument if it has made a payment on another (typically more junior) capital instrument or share. This obligation is inconsistent with the requirement for full discretion at all times. Furthermore, the term "cancel distributions/payments" means to forever extinguish these payments. It does not permit features that require the insurer to make distributions/payments in kind at any time.

[11] Institutions may use a broad index as a reference rate in which the issuing institution is a reference entity; however, the reference rate should not exhibit significant correlation with the institution's credit standing. If an institution plans to issue capital instruments where the margin is linked to a broad index in which the institution is a reference entity, the institution should ensure that the dividend/coupon is not credit-sensitive.

10. The instrument cannot contribute to liabilities exceeding assets if such a balance sheet test forms part of national insolvency law.
11. Other than preferred shares, category B instruments included in capital available must be classified as equity per relevant accounting standards.
12. Neither the insurer nor a related party over which the insurer exercises control or significant influence can have purchased the instrument, nor can the insurer directly or indirectly have funded the purchase of the instrument.
13. The instruments cannot have any features that hinder recapitalization, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified timeframe.
14. If the instrument is not issued directly by the insurer (e.g. it is issued out of a special purpose vehicle or SPV), proceeds must be available immediately without limitation to an insurer in a form that meets or exceeds all of the other criteria for inclusion in capital available as specified under category B. For greater certainty, the only assets the SPV may hold are intercompany instruments issued by the insurer or a related entity with terms and conditions that meet or exceed criteria specified under category B. Put differently, instruments issued to the SPV have to fully meet or exceed all of the eligibility criteria under category B as if the SPV itself was an end investor – i.e. the insurer cannot issue a lower quality capital or senior debt instrument to an SPV and have the SPV issue higher quality capital instruments to third-party investors so as to receive recognition as qualifying capital under category B.

Purchase for cancellation of Category B capital instruments is permitted at any time with the prior approval of the Superintendent. For further clarity, a purchase for cancellation does not constitute a call option as described in the above Category B qualifying criteria.

Tax and regulatory event calls are permitted during an instrument's life subject to the prior approval of the Superintendent and provided the insurer was not in a position to anticipate such an event at the time of issuance.

Dividend stopper arrangements that stop payments on common shares or Category B instruments are permissible provided the stopper does not impede the full discretion the insurer must have at all times to cancel distributions or dividends on the Category B instrument, nor must it act in a way that could hinder the recapitalization of the institution pursuant to criterion number 13 above. For example, it would not be permitted for a stopper on a Category B instrument to:

- attempt to stop payment on another instrument where the payments on the other instrument were not also fully discretionary;
- prevent distributions to shareholders for a period that extends beyond the point in time that dividends or distributions on the Category B instrument are resumed;
- impede the normal operation of the institution or any restructuring activity, including acquisitions or disposals.

A dividend stopper may also act to prohibit actions that are equivalent to the payment of a dividend, such as the insurer undertaking discretionary share buybacks.

Where an amendment or variance of a Category B instrument's terms and conditions affects its recognition as regulatory capital, such amendment or variance will only be permitted with the prior approval of the Superintendent.[12]

Insurers are permitted to "re-open" offerings of capital instruments to increase the principal amount of the original issuance provided that call options will only be exercised, with the prior approval of the Superintendent, on or after the fifth anniversary of the closing date of the latest re-opened tranche of securities.

Defeasance options may only be exercised on or after the fifth anniversary of the closing date with the prior approval of the Superintendent.

2.1.3. Category C capital

- Instruments issued by the institution that meet category C criteria, but do not meet the category A or B criteria, subject to an applicable limit;
- Surplus (share premium) resulting from the issuance of instruments meeting the category C criteria.

2.1.3.1. Qualifying criteria for inclusion of capital instruments in Category C for regulatory capital purposes

For an instrument to be included in capital available under category C, it must meet <u>all</u> of the following criteria:

1. Issued and paid-in in cash or, with the prior approval of the Superintendent, in property.
2. Subordinated to policyholders and general creditors of the insurer.
3. Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis the insurer's policyholders and/or general creditors.
4. Maturity:
    a. minimum original maturity of at least five years;
    b. recognition in regulatory capital in the remaining five years before maturity will be amortized on a straight line basis;
    c. there are no step-ups[13] or other incentives to redeem.

[12] Any modification of, addition to, or renewal or extension of an instrument issued to a related party is subject to the legislative requirement that transactions with a related party be at terms and conditions that are at least as favourable to the institution as market terms and conditions.

5. May be callable at the initiative of the issuer only after a minimum of five years:
    a. To exercise a call option, an insurer must receive the prior approval of the Superintendent; and
    b. An insurer must not do anything that creates an expectation that the call will be exercised;[14] and
    c. An insurer must not exercise a call unless:
        i. It replaces the called instrument with capital of the same or better quality, including through an increase in retained earnings, and the replacement of this capital is done at conditions that are sustainable for the income capacity of the insurer;[15] or
        ii. The insurer demonstrates that its capital position is well above the supervisory target capital requirements after the call option is exercised.
6. The investor must have no rights to accelerate the repayment of future scheduled payments (interest or principal), except in bankruptcy, insolvency, wind-up, or liquidation.
7. The instrument cannot have a credit sensitive dividend feature, i.e. a dividend/coupon that is reset periodically based in whole or in part on the insurer's credit standing[16].
8. Neither the insurer nor a related party over which the insurer exercises control or significant influence can have purchased the instrument, nor can the insurer directly or indirectly have funded the purchase of the instrument.
9. If the instrument is not issued directly by the insurer (e.g. it is issued out of an SPV), proceeds must be available immediately without limitation to the insurer in a form that meets or exceeds all of the criteria for inclusion specified under category C. For greater certainty, the only assets the SPV may hold are intercompany instruments issued by the institution or a related entity with terms and conditions that meet or exceed the above category C criteria. Put differently, instruments issued to the SPV have to fully meet or exceed all of the eligibility criteria under category C as if the SPV itself was an end investor – i.e. the institution cannot issue a lower capital or a senior debt instrument to an SPV and have the SPV issue higher quality capital instruments to third-party investors so as to receive recognition as qualifying capital under category C.

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[13] A step-up is defined as a call option combined with a pre-set increase in the initial credit spread of the instrument at a future date over the initial dividend (or distribution) rate after taking into account any swap spread between the original reference index and the new reference index. Conversion from a fixed rate to a floating rate (or vice versa) in combination with a call option without any increase in credit spread would not constitute a step-up.

[14] An option to call the instrument after five years but prior to the start of the amortisation period will not be viewed as an incentive to redeem as long as the insurer does not do anything that creates an expectation that the call will be exercised at this point.

[15] Replacement issuances can be concurrent with but not after the instrument is called.

[16] Insurers may use a broad index as a reference rate in which the issuing insurer is a reference entity; however, the reference rate should not exhibit significant correlation with the insurer's credit standing. If an insurer plans to issue capital instruments where the margin is linked to a broad index in which the insurer is a reference entity, the insurer should ensure that the dividend/coupon is not credit-sensitive.

Category C capital instruments must not contain restrictive covenants or default clauses that would allow the holder to trigger acceleration of repayment in circumstances other than the insolvency, bankruptcy or winding-up of the issuer.

Purchase for cancellation of category C instruments is permitted at any time with the prior approval of the Superintendent. For further clarity, a purchase for cancellation does not constitute a call option as described in the above Category C criteria.

Tax and regulatory event calls are permitted during an instrument's life subject to the prior approval of the Superintendent and provided the insurer was not in a position to anticipate such an event at the time of issuance.

Where an amendment or variance of a Category C instrument's terms and conditions affects its recognition as regulatory capital, such amendment or variance will only be permitted with the prior approval of the Superintendent[17].

Institutions are permitted to "re-open" offerings of capital instruments to increase the principal amount of the original issuance provided that call options will only be exercised, with the prior approval of the Superintendent, on or after the fifth anniversary of the closing date of the latest re-opened tranche of securities.

Defeasance options may only be exercised on or after the fifth anniversary of the closing date with the prior approval of the Superintendent.

2.1.3.2. Amortization

Category C capital instruments are subject to straight-line amortization in the final five years prior to maturity. Hence, as these instruments approach maturity, redemption or retraction, such outstanding balances are to be amortized based on the following schedule:

Years to Maturity	***Included in Capital***
5 years or more	100%
4 years and less than 5 years	80%
3 years and less than 4 years	60%
2 years and less than 3 years	40%
1 year and less than 2 years	20%
Less than 1 year	0%

For instruments issued prior to January 1, 2015, where the terms of the instrument include a redemption option that is not subject to prior approval of the Superintendent and/or holders'

[17] Any modification of, addition to, or renewal or extension of an instrument issued to a related party is subject to the legislative requirement that transactions with a related party be at terms and conditions that are at least as favourable to the institution as market terms and conditions.

retraction rights, amortization should begin five years prior to the effective dates governing such options. For example, a 20-year debenture that can be redeemed at the insurer's option at any time on or after the first 10 years would be subject to amortization commencing in year 5. Further, where a subordinated debt was redeemable at the insurer's option at any time without the prior approval of the Superintendent, the instrument would be subject to amortization from the date of issuance. For greater certainty, this would not apply when redemption requires the Superintendent's approval as is required for all instruments issued pursuant to the above criteria in section 2.1.3.1.

Amortization should be computed at the end of each fiscal quarter based on the "years to maturity" schedule above. Thus, amortization would begin during the first quarter that ends within five calendar years to maturity. For example, if an instrument matures on October 15, 2020, 20% amortization of the issue would occur on October 16, 2015 and be reflected in the December 31, 2015 regulatory return. An additional 20% amortization would be reflected in each subsequent December 31 return.

2.1.4. Non-controlling interests

P&C insurers are permitted to include, in capital available, non-controlling interests in operating consolidated subsidiaries, provided:

i. the capital instruments meet the qualifying criteria under category A, B and C;

ii. the capital in the subsidiary is not excessive in relation to the amount necessary to carry on the subsidiary's business; and

iii. the level of capitalization of the subsidiary is comparable to that of the insurance company as a whole.

If a subsidiary issues capital instruments for the funding of the P&C insurer, or that are substantially in excess of its own requirements, the terms and conditions of the issue, as well as the intercompany transfer, must ensure that investors are placed in the same position as if the instrument were issued by the P&C insurer directly in order for it to qualify as capital available upon consolidation. This can only be achieved by the subsidiary using the proceeds of the issue to purchase a similar instrument from the parent. Since subsidiaries cannot buy shares of the parent P&C insurance company, it is likely that this treatment will only be applicable to the subordinated debt. In addition, to qualify as capital for the consolidated entity, the debt held by third parties cannot effectively be secured by other assets, such as cash, held by the subsidiary.

2.2. Capital Composition Limits

The inclusion of capital instruments qualifying under category B and category C criteria is subject to the following limits:

- The sum of capital instruments meeting the qualifying criteria under category B and category C will not exceed 40% of total capital available, excluding accumulated other comprehensive income;
- Capital instruments meeting the qualifying criteria under category C will not exceed 7% of total capital available, excluding accumulated other comprehensive income.

Category B and category C capital exceeding the allowable limits will be subject to the following treatment for regulatory capital purposes:

- In cases where capital instruments qualifying under one of either category B or C exceed the limits, the capital in excess of the limits will not be considered in the calculation of capital available. In cases where capital instruments both under category B and category C are in excess of the prescribed limits, the greater value of the two excess amounts will be excluded from capital available. In doing so, P&C insurers must first fully exclude excess capital under category C, followed by excess capital under category B.
- Under certain exceptional circumstances and subject to OSFI's supervisory approval, a company may be permitted to continue to include such excess amounts in capital available temporarily, upon providing OSFI with a satisfactory plan outlining the company's strategy to achieve compliance with the limits as soon as possible. Typically, only those excesses arising after issuance and as a result of operating losses or extraordinary events beyond the control of management will normally be eligible for temporary inclusion in capital available. In most other circumstances, for example, excesses resulting from:
    1) purchases or redemptions of capital instruments;
    2) discretionary dividend payments;
    3) new issuances of non-common capital instruments within the same fiscal quarter; or
    4) foreseeable events;

  would generally <u>not</u> qualify for inclusion in capital available.

2.3. Regulatory Adjustments to Capital Available

2.3.1. Deductions:

1. Interests in and loans or other forms of lending provided to non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest:
    - Interests in non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest must be deducted from capital available (reference section 2.4);
    - Loans or other forms of lending provided to non-qualifying subsidiaries, associates, and joint ventures in which the company holds more than a 10% ownership interest that are reported as equity on their financial statements must be deducted from capital available (reference section 2.4).
2. Unsecured unregistered reinsurance exposures and self-insured retentions:

- Amounts receivable and recoverable from an unregistered reinsurer to the extent that they are not covered by amounts payable to the same assuming reinsurer or acceptable collateral (reference section 4.3) must be deducted from capital available;
- Self-insured retentions, included in other recoverables on unpaid claims, where OSFI requires acceptable collateral to ensure collectability of recoverables, and no collateral has been received (reference section 4.4) must be deducted from capital available.

3. The earthquake premium reserve (EPR) not used as part of financial resources to cover earthquake risk exposure (reference section 4.5).
4. Deferred policy acquisition expenses (DPAE) associated with accident and sickness (A&S) business, other than those arising from commissions and premium taxes.

   The methodology for calculating insurance risk margin for A&S business will be revised at a future date. The current methodology where risk factors are applied to earned premiums necessitates a full deduction from capital of DPAE – other, and a capital requirement for DPAE – commissions (reference section 4.6).

5. Accumulated other comprehensive income on cash flow hedges:

   The amount of cash flow hedge reserve that relates to the hedging of items that are not fair valued on the balance sheet (including projected cash flows) must be derecognized in the calculation of capital available. This includes items that are not recognized on the balance sheet but excludes items that are fair valued on the balance sheet. Positive amounts should be deducted from capital available and negative amounts should be added back. This treatment specifically identifies the element of the cash flow hedge reserve that is to be derecognized for prudential purposes. It removes the element that gives rise to artificial volatility in capital available, as in this case the reserve only reflects one half of the picture (the fair value of the derivative, but not the changes in fair value of the hedged future cash flow).

6. Accumulated impact of shadow accounting:

   If an insurer has elected to use the shadow accounting option within IFRS, the accumulated net after-tax impact must be reversed from capital available.

7. Goodwill and other intangible assets:

   - Goodwill related to consolidated subsidiaries and subsidiaries deconsolidated for regulatory capital purposes and the proportional share of goodwill in joint ventures subject to the equity method accounting must be deducted from capital available. The amount reported on the balance sheet is to be deducted net of any associated deferred tax liability that would be extinguished if the goodwill becomes impaired or derecognized under relevant accounting standards.
   - All other intangible assets[18] must be deducted from capital available. This includes intangible assets related to consolidated subsidiaries and subsidiaries deconsolidated for regulatory capital purposes, and the proportional share of intangible assets in joint ventures subject to the equity method of accounting. The full amount is to be deducted

[18] This includes computer software intangibles.

net of any associated deferred tax liability that would be extinguished if the intangible assets become impaired or derecognized under relevant accounting standards.

8. Deferred tax assets:

   Deferred tax assets (DTAs), except for those eligible for the 10% risk factor, must be deducted from capital available. In addition, the amount of DTAs that is in excess of the amount that could be recoverable from income taxes paid in the three immediate preceding years is deducted from capital available. Deferred tax assets may be netted with associated deferred tax liabilities (DTLs) only if the DTAs and DTLs relate to taxes levied by the same taxation authority and offsetting is permitted by the relevant taxation authority[19]. The DTLs permitted to be netted against DTAs must exclude amounts that have been netted against the deduction of goodwill, intangibles and defined benefit pension plan assets, and must be allocated on a pro rata basis between DTAs that are to be deducted in full and DTAs that are subject to the 10% risk factor (reference section 6.1).

9. Cumulative gains and losses due to changes in own credit risk on fair valued financial liabilities:

   All accumulated after-tax unrealized gains and losses that have resulted from changes in the fair value of P&C insurer's financial liabilities that are due to changes in the institution's own credit risk must be deducted from capital available. In addition, with regard to derivative liabilities, all accounting valuation adjustments arising from the institution's own credit risk should also be deducted on an after-tax basis. The offsetting between valuation adjustments arising from the institution's own credit risk and those arising from its counterparties' credit risk is not permitted.

10. Defined benefit pension fund assets and liabilities:

    For each defined benefit pension fund that is in a surplus position and reported as an asset on the institution's balance sheet, the amounts reported as a surplus asset on the balance sheet must be deducted from capital available, net of any associated deferred tax liability that would be extinguished if the asset becomes impaired or derecognized under the relevant accounting standards, and net of any amount of available refunds of defined benefit pension fund surplus assets to which the insurer has unrestricted and unfettered access. P&C insurers may only reduce this deduction by an amount of available refunds of defined benefit pension plan surplus assets if they obtain a prior written supervisory approval from OSFI [20].

11. Investments in own instruments (treasury stock):

    All of institution's investments in its own instruments, whether held directly or indirectly, must be deducted from capital available (unless already derecognized

[19] This does not permit offsetting of DTAs across provinces.

[20] To obtain OSFI supervisory approval, a P&C insurer must demonstrate, to OSFI's satisfaction, that it has clear entitlement to the surplus and that it has unrestricted and unfettered access to the surplus pension assets. Evidence required by OSFI may include, among other things, an acceptable independent legal opinion and the prior authorization from the pension plan members and the pension regulator.

under IFRS). In addition, any own stock that the institution could be contractually obliged to purchase should be deducted from capital available.

12. Reciprocal cross holdings in the common shares of insurance, banking and financial entities:

    Reciprocal cross holdings in common shares (e.g. Insurer A holds shares of Insurer B and Insurer B in return holds shares of Insurer A), also known as back-to-back placements, that are designed to artificially inflate the capital position of institutions must be fully deducted from capital available.

Items that are deducted from capital available will be subject to a 0% risk factor for capital required purposes.

2.3.2. Adjustments:

Adjustments to owner-occupied property valuations[21]:

- For owner-occupied property accounted for using the cost model and where the deemed value of the property was determined at conversion to the International Financial Reporting Standards (IFRS) by using fair value, unrealized after tax fair value gains (losses) must be reversed from the institution's reported retained earnings for capital adequacy purposes. The amount determined at conversion is an on-going deduction from capital available and can only be changed as a result of a sale of owner-occupied properties (owned at the time of IFRS conversion) and the resulting realization of actual gains (losses); and
- Accumulated net after tax revaluation losses in excess of gains accounted for using the revaluation model must be reversed from retained earnings. Net after tax revaluation gains must be reversed from accumulated other comprehensive income included in capital available.

2.4. Capital Treatment of Interests in and Loans to Subsidiaries, Associates and Joint Ventures

The equity method of accounting is used for all interests in non-qualifying subsidiaries, associates and joint ventures[22]. These interests remain unconsolidated for MCT purposes.

2.4.1. Consolidated subsidiaries (e.g. P&C insurance and ancillary businesses such as agencies, brokerages and mutual funds)

The financial statements of the subsidiaries are fully consolidated and the net value is included in the parent's capital available. The assets and liabilities of these subsidiaries are therefore subject to risk factors and liability margins in the parent's MCT.

[21] No adjustments are required for "investment properties" as fair value gains (losses) are allowed for capital purposes.

[22] Interests in limited partnerships that are reported using the equity method of accounting are subject to the same capital treatment as joint ventures.

2.4.2. Non-qualifying subsidiaries

Interests in non-qualifying subsidiaries are excluded from capital available. Loans or other forms of lending provided to a non-qualifying subsidiary, if they are reported as equity on the financial statements of the non-qualifying subsidiary, are also excluded from capital available of the P&C insurer. Loans or other forms of lending provided to a non-qualifying subsidiary that are **not** reported as equity are subject to a risk factor of 45%. Receivables from non-qualifying subsidiaries will attract a risk factor of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

2.4.3. Associates

An enterprise is an associate of another enterprise if:

- both are subsidiaries of the same enterprise; or
- each of them represents an investment by the same person or enterprise, in which the investor holds 20% or more of the voting power in each investment; or
- one enterprise exerts significant influence over the other. The notion of significant influence is defined in accordance with IFRS; or
- if an insurance broker is economically dependent on the P&C insurer, then the broker must be treated as an associate of the P&C insurer for capital purposes.

Interests in associates are excluded from capital available. Loans or other forms of lending provided to associates, if they are reported as equity in the financial statements of the associates, are also excluded from capital available of the P&C insurer. Loans or other forms of lending provided to associates that are **not** reported as equity are subject to a risk factor of 45%. Insurance receivables from associates that are registered reinsurers will attract a risk factor of 0.7%. Other receivables from associates will be subject to risk factors of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

2.4.4. Joint ventures in which a company holds less than or equal to 10% ownership interest

Where a P&C insurer holds less than or equal to 10% ownership in a joint venture, the investment is included in capital available. The investment is reported under capital required for equity risk, and is subject to the risk factor applicable to investments in common shares (reference section 5.3).

2.4.5. Joint ventures in which a company holds more than a 10% ownership interest

Interests in joint ventures with more than 10% ownership are excluded from capital available. Loans or other forms of lending provided to a joint venture with more than a 10% ownership interest, if they are reported as equity on the financial statements of the joint venture with more than a 10% ownership interest, are also excluded from capital available of the P&C insurer. Loans or other forms of lending provided to a joint venture with more than a 10% ownership interest that are **not** reported as equity are subject to a risk factor of 45%. Receivables from joint

ventures with more than a 10% ownership interest will attract a risk factor of 5% or 10% depending on how long the balances are outstanding (reference section 6.1).

2.4.6. Ownership interests in an intra-group investment arrangement

Where companies participate in an intra-group investment arrangement, and the arrangement has been approved by OSFI pursuant to the requirements of the ICA, companies are not required to deduct from capital available their ownership interest. A "look-through" approach should be used for intra-group investments, similar to that for mutual funds (reference section 6.1).

2.4.7 Summary of exposures

Types of exposures a P&C insurer might have with non-qualifying subsidiaries, associates, and joint ventures:

Exposure	Capital treatment
Common or preferred shares (non-qualifying subsidiaries and associates) including share of accumulated earnings/losses less dividends received based on equity accounting	Excluded from capital available
Ownership interests > 10% joint venture	Excluded from capital available
Ownership interests ≤ 10% joint venture	Included in capital available with a risk factor of 30% applied to the ownership interest
Loans or other forms of lending (bonds, debentures, mortgages, etc.) reported as equity	Excluded from capital available
Loans or other forms of lending (bonds, debentures, mortgages, etc.) **not** reported as equity	Included in capital available with a risk factor of 45%
Insurance receivables from associates that are registered reinsurers	Included in capital available with a risk factor of 0.7%
Receivables from associates that are registered reinsurers	Included in capital available with a risk factor of 5% or 10% depending on how long the balances are outstanding
Receivables from other associates, non-qualifying subsidiaries and joint ventures	Included in capital available with a risk factor of 5% or 10% depending on how long the balances are outstanding

Appendix 2-A: Information Requirements for Capital Confirmations

Given the potential impact of the disqualification of a capital instrument, P&C insurers are encouraged to seek confirmations of capital quality from OSFI prior to issuing instruments[23]. In conjunction with such requests, the insurer is expected to provide the following information to the Capital Division:

1. An indicative term sheet specifying indicative dates, rates and amounts and summarizing key provisions in respect of all proposed instruments.
2. The draft and final terms and conditions of the proposed instrument supported by relevant documents (i.e. Prospectus, Offering Memorandum, Debt Agreement, Share Terms, etc.).
3. A copy of the institution's current by-laws or other constating documents relevant to the capital to be issued as well as any material agreements, including shareholders' agreements, which may affect the capital quality of the instrument.
4. Where applicable, for all debt instruments only:
    a) the draft and final Trust Indenture and supplemental indentures; and
    b) the terms of any guarantee relating to the instrument.
5. Where the terms of the instrument include a redemption option or similar feature upon a tax event, an external tax opinion confirming the availability of such deduction in respect of interest or distributions payable on the instrument for income tax purposes[24].
6. An accounting opinion describing the proposed treatment and disclosure of the capital instrument (other than common shares) on the institution's financial statements[25].
7. Where the initial interest or coupon rate payable on the instrument resets periodically or the basis of the interest rate changes from fixed to floating (or vice versa) at a pre-determined future date, calculations demonstrating that no incentive to redeem, or step-up, will arise upon the change in the initial rate. Where applicable, a step-up calculation should be provided according to the swap-spread methodology, which confirms there is no step-up upon the change in interest rate, and supported by screenshots of the applicable reference index rate(s).
8. Capital projections demonstrating that the insurer will be in compliance with its supervisory target capital ratios as well as the capital composition requirements specified in section 2.2 at the end of the quarter in which the instrument is expected to be issued.
9. An assessment of the features of the proposed capital instrument against the qualifying criteria for category B capital instruments or category C capital instruments, as applicable, as specified in the MCT Guideline. For greater certainty, this assessment would only be required for an initial issuance or precedent and is not required for subsequent issuances provided the terms of the instrument are not materially altered.

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[23] If an insurer fails to obtain a capital confirmation (or obtains a capital confirmation without disclosing all relevant material facts to OSFI), OSFI may, at its discretion and at any time determine that such capital does not comply with these principles and is to be excluded from the insurer's capital available.

[24] OSFI reserves the right to require a Canada Revenue Agency advance tax ruling to confirm such tax opinion if the tax consequences are subject to material uncertainty.

[25] OSFI reserves the right to require such accounting opinion to be an external opinion of a firm acceptable to OSFI if the accounting consequences are subject to material uncertainty.

10. A written attestation from a senior officer of the institution confirming that the insurer has not provided financing to any person for the express purpose of investing in the proposed capital instrument.

Chapter 3. Foreign Companies Operating in Canada on a Branch Basis

Under subsection 608(1) of the ICA, a foreign company is required to maintain in Canada an adequate margin of assets over liabilities in respect of its insurance business in Canada. The Branch Adequacy of Assets Test (BAAT) provides the framework within which the Superintendent assesses whether foreign companies maintain an adequate margin pursuant to subsection 608(1).

All provisions in this guideline apply to branches unless stated otherwise in this chapter.

Notwithstanding the stated requirements, in any case where the Superintendent believes that the capital treatment is inappropriate, a specific additional capital requirement will be determined.

3.1. Branch Adequacy of Assets Test

The BAAT ratio measures the adequacy of net assets available to meet the margin requirements as determined in accordance with this guideline. The BAAT ratio is defined as the net assets available divided by the minimum margin required, expressed as a percentage. The determination of the net assets available and the minimum margin required is described below.

3.1.1 Net assets available

For BAAT purposes, net assets available are calculated as follows, subject to regulatory adjustments:

Total vested assets

Less:

Total net liabilities, which are equal to total liabilities, net of:

- Recoverables from registered reinsurers;
- Recoverables from unregistered reinsurers;
- Other (allowable) recoverables on unpaid claims, including salvage and subrogation;
- Self-insured retention recoverables to the extent permitted by OSFI (reference section 4.4);
- Unearned commissions; and
- Deferred policy acquisition expenses (DPAE) associated with accident and sickness (A&S) business (reference section 4.6), equal to:
    - 55% of the net of deferred commissions and unearned commissions (if the net value is zero or negative, there is no adjustment for this item); and
    - 100% of deferred premium taxes.

3.1.2 Regulatory adjustments to net assets available:

Additions:

1. Deferred policy acquisition expenses, including DPAE associated with commissions, premium taxes and others, net of unearned commissions. This excludes DPAE relating to A&S business (reference section 4.6).
2. Receivables from agents and policyholders, including brokers.
3. Balance sheet values of right-of-use assets associated with owner-occupied leased properties, as recognised on the branch's balance sheet in accordance with relevant accounting standards.
4. Accumulated net after tax revaluation losses in excess of gains on owner-occupied properties that are reflected in the head office account for accounting purposes.
5. Amounts due from federally regulated insurers and approved reinsurers that can be legally netted against the insurance contract liabilities of the branch and that meet the following conditions:
    - The amount due does not exceed the liability owed to the insurer (i.e. any excess of receivables over liabilities is excluded).
    - The branch has executed a written, bilateral netting contract or agreement with the insurer to which the liability is owed that creates a single legal obligation. The result of such an arrangement must be that the branch has only one obligation for payment or one claim to receive funds based on the net sum of the liabilities and amounts due in the event the counterparty to the agreement failed to perform due to default, bankruptcy, liquidation or similar circumstances.
    - The netting arrangement specifies that only the liabilities to the counterparty arising out of the Canadian operations of the foreign company may be taken into consideration in determining the net amount owed. In particular, the counterparty must not be able to net amounts due to the branch against any liabilities of the home office or affiliates of the branch that are not liabilities arising out of the Canadian operations of the foreign company.
    - The branch must have written and reasoned legal opinions confirming that, in the event of any legal challenge, the relevant courts or administrative authorities will find the amount owed under the netting agreement to be the net amount under the laws of all relevant jurisdictions. In reaching this conclusion, legal opinions must address the validity and enforceability of the entire netting agreement under its terms.
        - The laws of "all relevant jurisdictions" are: a) the law of the jurisdiction where the counterparty is incorporated and, if the foreign branch of a counterparty is involved, the laws of the jurisdiction in which the branch is located; b) the law governing the individual insurance transaction; and c) the law governing any contracts or agreements required to effect the netting arrangement.The legal opinions must be generally recognized as

such by the legal community in Canada or by a memorandum of law that addresses all relevant issues in a reasoned manner.

- The branch must have procedures in place to update legal opinions as necessary to ensure continuing enforceability of the netting arrangement in light of possible changes in relevant law.
- The netting contract/agreements terms and conditions and the quality and content of the legal opinions must meet the conditions of this guideline and be submitted to OSFI for review prior to the branch including the receivables in its net assets available.

Deductions:

6. Amounts recoverable from unregistered reinsurers to the extent that they are not covered by acceptable collateral held as security from assuming reinsurers (reference section 4.3).
7. Unrealized fair value gains (losses) on owner-occupied properties reflected in the head office account at conversion to IFRS.
8. Accumulated net after tax revaluation gains on owner-occupied properties that are reflected in the accumulated other comprehensive income for accounting purposes.
9. Net after-tax impacts of shadow accounting. Where a P&C insurer has elected to use the shadow accounting option within IFRS, net after-tax impact of shadow accounting should be deducted from net assets available.

3.1.3 Margin required

Margin required is calculated with respect to the branch's liabilities, vested assets and other assets available. The BAAT minimum margin required is the sum of the following risk margins, less the diversification credit, divided by 1.5:

Sum of:

i) Margin required for insurance risk (reference chapter 4):
   a. Margin required for unpaid claims and premium liabilities;
   b. Margin required for reinsurance ceded to unregistered reinsurers;
   c. Catastrophe reserves.

ii) Margin required for market risk (reference chapter 5):
   a. Margin required for interest rate risk;
   b. Margin required for foreign exchange risk;
   c. Margin required for equity risk;
   d. Margin required for real estate risk;
   e. Margin required for other market risk exposures.

iii) Margin required for credit risk (reference chapter 6):

a. Margin required for counterparty default risk for balance sheet assets;

b. Margin required for counterparty default risk for off-balance sheet exposures;

c. Margin required for collateral held for unregistered reinsurance and self-insured retention (reference section 4.3.3).

iv) Margin required for operational risk (reference chapter 7).

Less:

v) Diversification credit (reference chapter 8).

Divided by 1.5.

Chapter 4. Insurance Risk

Insurance risk is the risk arising from the potential for claims or payouts to be made to policyholders or beneficiaries. Exposure to this risk results from the present value of losses being higher than the amounts originally estimated.

Insurance risk includes uncertainties around:

a) the ultimate amount of net cash flows from premiums, commissions, claims, and related settlement expenses, and

b) the timing of the receipt and payment of these cash flows.

The insurance risk component reflects the P&C insurer's consolidated risk profile by individual classes of insurance and results in specific margin requirements for insurance risk. For the MCT, the risk associated with insurance exposure is divided into four parts:

i.) reserving risk associated with variation in claims provisions (unpaid claims);

ii.) underwriting risk including catastrophe risk, other than earthquakes and nuclear (premium liabilities);

iii.) earthquake and nuclear risks; and

iv.) risk associated with unregistered reinsurance.

4.1. Diversification Credit within Insurance Risk

The risk factors for each line of business contain an implicit diversification credit based on the assumption that insurers have a well-diversified portfolio of risks for a given portfolio of business.

4.2. Margins for Unpaid Claims and Premium Liabilities

Given the uncertainty that provisions will be sufficient to cover the anticipated liabilities, margins are added to cover a potential shortfall.

4.2.1. Margin for unpaid claims

The margin for unpaid claims is calculated by line of business, by multiplying the net amount at risk (i.e. net of reinsurance, salvage and subrogation, and self-insured retentions) less the provision for adverse deviation (PfAD), by the applicable risk factors.

4.2.2. Margin for premium liabilities

The margin for premium liabilities is calculated by line of business, by multiplying the greater of:

- net premium liabilities (i.e. net of reinsurance) less the PfAD; and
- 30% of the net written premiums for the past 12 months

by the applicable risk factors.

The insurance risk factors are as follows:

Class of Insurance	Risk Factor for Unpaid Claims	Risk Factor for Premium Liabilities
Personal property	15%	20%
Commercial Property	10%	20%
Aircraft	20%	25%
Auto – Liability	10%	15%
Auto – Personal Accident	10%	15%
Auto – Other	15%	20%
Boiler & Machinery	15%	20%
Credit	20%	25%
Credit Protection	20%	25%
Fidelity	20%	25%
Hail	20%	25%
Legal Expense	25%	30%
Liability	25%	30%
Other Approved Products	20%	25%
Surety	20%	25%
Title	15%	20%
Marine	20%	25%
Warranty	Use same risk factors as the underlying line of business	
Accident & Sickness	Refer to section 4.6	

4.2.3. Risk factors for warranty business

The risk factors to be used for home and product warranty should be the same as those applied for personal property. The risk factors to be used for equipment warranty should be the same as the risk factors applied for boiler and machinery.

4.3. Risk Mitigation and Risk Transfer - Reinsurance

4.3.1. General

The terms "registered" and "unregistered," as defined below, are relevant in determining whether credit can be taken for reinsurance placed by P&C insurers. In order for a P&C insurer to obtain credit for reinsurance on account of any reinsurance arrangement with a registered or unregistered reinsurer, the reinsurance arrangement must comply with the requirements of Guideline B-3 *Sound Reinsurance Practices and Procedures*.

4.3.2. Registered reinsurers

4.3.2.1 Definition of registered reinsurer

A reinsurer is generally considered to be a registered reinsurer if it is:

(a) a reinsurer that is either:

  i. incorporated federally and has reinsured the risks of the ceding company, or

  ii. a foreign company that has reinsured in Canada the risks of the ceding company, and is authorized by order of the Superintendent to do so;

(b) a provincially/territorially regulated insurer that has been approved by the Superintendent;

(c) the Insurance Corporation of British Columbia;

(d) the Manitoba Public Insurance Corporation;

(e) Saskatchewan Government Insurance; or

(f) Export Development Canada.

Subsection 578(5) of the ICA requires a foreign company, in respect of risks it reinsures in Canada, to set out in all premium notices, applications for policies and policies (which may include cover notes, offer letters or quotations) a statement that the document was issued or made in the course of its insurance business in Canada. In cases where the cover note, offer letter or quotation can be considered neither an application for a policy nor a policy, a P&C insurer will be permitted to treat a reinsurance arrangement as registered reinsurance only if the foreign reinsurer includes, in the cover note, offer letter or quotation, a statement that the foreign reinsurer intends to issue the policy under negotiation in the course of its insurance business in Canada, and that it will take measures to ensure that the cedant's risks will be reinsured in Canada in accordance with OSFI's advisory No. 2007-01-R1 entitled *Insurance in Canada of Risks*.

With respect to a Canadian company's reinsurance of out-of-Canada business only, reinsurers regulated in an OECD country may be recognized as "registered" on the basis of financial soundness, provided that the reinsurance agreements are recognized by the regulatory agencies of the countries in question. OSFI retains the authority to disqualify such reinsurance if not satisfied with the financial condition of the reinsuring company.

All out-of-Canada business ceded to reinsurers not satisfying the recognized "registered" definition in the previous paragraph must follow the requirements of section 4.3.3 and must be reported in the exhibit *Reinsurance Ceded to Unregistered Insurers* (the unregistered reinsurance exhibit) of the P&C Returns.

4.3.2.2 Risk factors

The risk of uncollectability of recoverables from reinsurers arises from the risk that the reinsurer will fail to pay the P&C insurer what it is owed. There is additional risk associated with mis-assessing the amount of the required provision. The risk factor applied to unpaid claims and unearned premiums recoverable from registered reinsurers is treated as a combined weight under

the MCT (reference section 6.1). Insurance receivables and amounts recoverable from intra-group pooling arrangements approved by OSFI are exempt from the application of the risk factors.

The balance sheet value used to calculate the credit risk requirement for reinsurance assets arising from registered reinsurance may be reduced by:

1. the liability for funds held by the ceding insurer for exclusive benefit of the ceding insurer (e.g. funds withheld reinsurance) to secure the payment to the ceding insurer by the reinsurer of the reinsurer's share of any loss or liability for which the reinsurer is liable under the reinsurance agreement; and
2. any other liabilities of the ceding insurer due to the reinsurer for which the ceding insurer has a legal and contractual right of setoff against the amount recoverable from the reinsurer.

Total reinsurance assets by reinsurer cannot be negative. Acceptable collateral posted by reinsurers under registered reinsurance agreements may be recognized provided the conditions under section 4.3.3.4 are met.

4.3.3. Unregistered reinsurers

4.3.3.1. Definition of unregistered reinsurer

A reinsurer is generally considered to be unregistered if it is not a registered reinsurer as defined in section 4.3.2.1.

A ceding P&C insurer is given credit for unregistered reinsurance where the ceding P&C insurer obtains and maintains a valid and enforceable security interest that has priority over any other security interest in assets of an unregistered reinsurer that are held in Canada in accordance with OSFI's *Guidance for Reinsurance Security Agreements (RSA)*. A ceding P&C insurer is also given credit for the amount of acceptable letters of credit held to secure the payment to the ceding P&C insurer by the reinsurer of the reinsurer's share of any loss or liability for which the reinsurer is liable under the reinsurance agreement. P&C insurers should refer to *General Guidelines for Use of Letters of Credit* available on OSFI's website.

4.3.3.2. Deduction from capital available

Amounts receivable and recoverable from an unregistered reinsurer, as reported on the balance sheet, are deducted from capital available to the extent that they are not covered by amounts payable to the assuming reinsurer or acceptable collateral. Acceptable collateral is defined as non-owned deposits under a RSA, other acceptable non-owned deposits, funds held to secure payment from an assuming reinsurer, and letters of credit held as security from an assuming reinsurer. Section 4.3.3.4 outlines further conditions for using collateral to obtain credit for unregistered reinsurance. Amounts payable to an assuming reinsurer may be deducted from amounts receivable and recoverable only where there is a legal and contractual right of setoff.

The deduction from capital available for receivables and recoverables from an unregistered reinsurer is calculated in the unregistered reinsurance exhibit of the P&C Returns.

In respect of each unregistered reinsurer to which a P&C insurer has ceded business, a deduction from capital available is required if the following calculation is positive:

$$A+B+C-D-E-F-G-H$$

Where:

(A) is the amount of unearned premiums ceded to the assuming insurer;

(B) is the amount of outstanding losses recoverable from the assuming insurer;

(C) is the amount of receivables from the assuming insurer;

(D) is the amount of payables to the assuming insurer;

(E) is the amount of non-owned deposits held as security from assuming insurer under an acceptable RSA;

(F) is the amount of other acceptable non-owned deposits;

(G) is the amount of funds held to secure payment from the assuming insurer;

(H) is the amount of acceptable letters of credit held as security from assuming insurer.

4.3.3.3. Margin required

The margin required for unregistered reinsurance is calculated in the unregistered reinsurance exhibit of the P&C Returns and reported as margin required for "Reinsurance ceded to unregistered insurers" in the MCT.

The margin is 20% of "Unearned premiums ceded to assuming insurer" and "Outstanding losses recoverable from assuming insurer" (collectively, "ceded policy liabilities"). The margin requirement for each unregistered reinsurer may be reduced to a minimum of zero by payables to the reinsurer and acceptable collateral (as defined in section 4.3.3.2) that are in excess of the amount of ceded policy liabilities and receivables from the assuming insurer.

Transition

Policy liabilities ceded on or before December 31, 2019 and any associated new claims or development on incurred claims are subject to a 15% margin required until December 31, 2022, the end of the transition period. During the transition period, any ceded policy liabilities on business from direct policies or assumed business with underlying direct policies with an effective date of January 1, 2020 or later are subject to the 20% margin required. After the transition period, starting January 1, 2023, all ceded policy liabilities for all unregistered reinsurance arrangements, including any remaining ceded policy liabilities that were subject to transition, are subject to the 20% margin required.

4.3.3.4. Collateral

The collateral used to obtain credit for a specific unregistered reinsurer must materially reduce the risk arising from the credit quality of the reinsurer. In particular, collateral used may not be related party obligations of the unregistered reinsurer (i.e. obligations of the reinsurer itself, its parent, or one of its subsidiaries or associates). With respect to the above three sources available to obtain credit, this implies that:

- To the extent that a ceding P&C insurer is reporting obligations due from a related party of the reinsurer as assets in its annual return, the ceding P&C insurer is precluded from taking credit for funds held to secure payment from the unregistered reinsurer;
- Reinsurers' assets located in Canada in which a ceding company has a valid and perfected first priority security interest under applicable law may not be used to obtain credit if they are obligations of a related party of the unregistered reinsurer; and
- A letter of credit is not acceptable if it has been issued by a related party of the unregistered reinsurer.

Collateral must be available to the company for a period of not less than the remaining term of the ceded liabilities in order to be valid towards obtaining credit for unregistered reinsurance. In cases where an arrangement contains a renewal provision for the cedant to maintain collateral for a part of or the whole of the remaining term of ceded liabilities (e.g. additional fees or higher interest rate), the renewal provision should be included when determining the ceded reserves.

Non-owned deposits from reinsurers

P&C insurers that have received non-owned deposits provided by an unregistered reinsurer must comply with OSFI's *Guidance for Reinsurance Security Agreements*.

Deposits from reinsurers that are "not owned" by a P&C insurer, including deposits held on behalf of reinsurers, are not to be reported on the P&C insurer's balance sheet. Details of these deposits must be reported in the unregistered reinsurance exhibit of the P&C Returns.

Non-owned deposits held on behalf of an unregistered assuming reinsurer must be valued at market value as at the end of the statement year, including the amount of investment income due and accrued respecting these deposits.

Letters of credit

In order to be recognized for capital purposes, letters of credit must be approved by OSFI. P&C insurers should refer to *Guidelines for Use of Letters of Credit*, available on OSFI's website, for OSFI's requirements relating to the use of LOCs and their approvals.

The limit on the use of letters of credit to obtain capital credit for unregistered reinsurance is 30% of "Unearned premiums ceded to assuming insurer" and "Outstanding losses recoverable from assuming insurer." This limit is applied in the aggregate and not against individual reinsurance exposures.

Capital requirements

Letters of credit for unregistered reinsurance are considered a direct credit substitute and are subject to risk factors based on the credit rating of the issuing/confirming bank and the term of ceded liabilities. Non-owned deposits held as collateral are subject to the same risk factors as those applied to similar assets owned by the P&C insurer (reference sections 5.3 and 6.1).

Capital requirements for collateral associated with unregistered reinsurance are calculated on an aggregate basis for the total amount of acceptable collateral from each reinsurer using applicable risk factors. Acceptable collateral that is greater than the unregistered reinsurance requirements is considered excess collateral and are not subject to capital requirements.

Two steps are required to compute excess collateral and arrive at a reduction in capital required for excess collateral.

Step 1: Computation of excess collateral (reference *P&C unregistered reinsurance* exhibit of the P&C Returns)

Reinsurance Ceded to an Unregistered Insurer	Amount ($)
Unearned premiums ceded to assuming insurer	100
Outstanding losses recoverable from assuming insurer	500
20% margin on unearned premiums and outstanding losses recoverable[26]	120
Receivable from assuming insurer	40
Payable to assuming insurer	(20)
Unregistered reinsurance exposure	**740**
Collateral required to reduce the margin required to 0 (500 + 100) x 120% + 40 - 20	740
Non-owned deposits	1,000
Funds held	100
Letters of credit	100
Total collateral	**1,200**
Excess collateral (no capital required on this amount) 1,200-740	**460**

The amount of excess collateral should be calculated separately for each individual reinsurer and then added together.

Step 2: Reduction in capital required for excess collateral

The total amount of capital required for collateral should be pro-rated to discount for excess collateral. Following step 1, the ratio of 0.38 (460/1,200) should be applied to the total amount of

[26] For unearned premiums ceded and outstanding losses recoverable subject to transition per section 4.3.3.3, a 15% margin will apply until December 31, 2022.

capital required for collateral in order to calculate the capital required for collateral excluding the excess. The calculation is provided in the following table.

	Collateral amount (01)	Risk factor (02)	Total capital required (03)=(01)x(02)	Proportional allocation of excess collateral (04)	Reduction in capital required for excess collateral (05)=(03)x(04)
LOCs (AA rating ≤ 1 year)	$100	0.25%	$0.25		
Non-owned deposits (AAA bonds ≤1 year)	$500	0.25%	$1.25		
Non-owned deposits (AA bonds >1 year ≤5 years)	$500	1.00%	$5.00		
Funds Held (demand deposits)	$100	0.25%	$0.25		
Total	$1,200		$6.75	0.38	$2.57

The capital requirements for acceptable collateral, less the excess, are reported as part of capital required for credit risk (reference chapter 6).

Funds held to secure payment from unregistered reinsurer

Cash and securities received to secure payment from unregistered reinsurers that have been co-mingled with the P&C insurer's own funds should be reported on the insurer's balance sheet in the appropriate asset categories and will be subject to the corresponding risk factors. Funds held also include reinsurance premiums withheld by the ceding company as specified in the reinsurance contract. Details of funds held must also be reported in the unregistered reinsurance exhibit of the P&C Returns. The reinsurance contract must clearly provide that, in the event of the cedant's or reinsurer's insolvency, the funds withheld must form part of the property of the cedant's general estate[27].

In order for a ceding insurer to obtain credit for funds held under a funds withheld reinsurance arrangement, the arrangement must not contain any contractual provision that would require payment of funds withheld to the reinsurer, other than those funds that, together with other forms of acceptable collateral, if any, are in excess of the ceded policy liabilities and the margin required for unregistered reinsurance, before all subject policies have expired and all claims settled (e.g. an acceleration clause). Furthermore, the ceding insurer may not provide non-contractual or implicit support, or otherwise create or sustain an expectation that any funds withheld could be paid to the reinsurer, other than those funds that, together with other forms of acceptable collateral, if any, are in excess of the ceded policy liabilities and the margin required for unregistered reinsurance, before all subject policies have expired and all claims settled.

[27] This requirement only applies to reinsurance contracts that came into force on or after January 1, 2018, or that have been renewed after that date.

4.4. Self-Insured Retention

Self-insured retention (SIR) represents the portion of a loss that is payable by the policyholder. In some cases, SIRs may be included in the policy declaration or in an endorsement to the policy, stipulating that the policy limit applies in excess of the SIR.

To admit SIRs recoverable for regulatory capital purposes, OSFI must be satisfied with the collectability of recoverables, and may require collateral to ensure collectability. For example, collateral may be required when it is deemed that there is an excessive concentration of SIRs owed by any one policyholder.

Letters of credit and other acceptable securities may be used as collateral for SIRs. Collateral used may not be related party obligations of the policyholder (i.e. obligations of the policyholder itself, its parent, or one of its subsidiaries or associates).

Letters of credit for SIRs are considered a direct credit substitute and are subject to a risk factor based on the credit rating of the issuing/confirming bank and the term of ceded liabilities (subject to the provision for excess collateralization). General guidelines concerning letters of credit as referred to in section 4.3 also apply to SIRs. Risk factors for collateral other than letters of credit are the same as those applied to similar assets owned by the P&C insurer (reference Chapter 5 and Chapter 6).

4.5. Catastrophes

4.5.1. Earthquake risk exposure

Insurers must refer to OSFI's Guideline B-9 *Earthquake Exposure Sound Practices* for details on OSFI's expectations relating to P&C insurers' earthquake exposure risk management and the related definitions. The MCT Guideline outlines the framework for quantifying the earthquake risk exposure for regulatory capital purposes and assessing insurers' capacity and financial preparedness to meet contractual obligations that may arise from a major earthquake.

Earthquake Reserves Formula:

Earthquake Reserves = (EPR + ERC) x 1.25

The amount of earthquake reserves includes Earthquake Premium Reserve (EPR) and Earthquake Reserve Component (ERC) and is added to total capital requirements for the purposes of the MCT/BAAT as capital/margin required at the target level.

ERC *(Section 4.5.1.3)* = {Earthquake Risk Exposure *(Section 4.5.1.1)*} - {Financial Resources *(Section 4.5.1.2)*} ≥ 0

The ERC must always be greater than or equal to 0.

In the case where EPR is not used as part of financial resources to cover the earthquake risk exposure, i.e. the company has enough financial resources to cover its earthquake risk exposure without the voluntary reserve, the EPR can be deducted from capital available instead of being added to total capital requirements.

4.5.1.1. Measurement of Earthquake Risk Exposure

The earthquake *Probable Maximum Loss (PML)* is the threshold dollar value of losses beyond which losses caused by a major earthquake are unlikely. Gross PML, which is the PML amount *after* deductibles but *before* catastrophic and other reinsurance protection, is used for calculating earthquake risk exposure for regulatory purposes. In this section, PML refers to a dollar amount[28] that includes adjustments for data quality, non-modelled exposures and model uncertainty as outlined in Guideline B-9 *Earthquake Exposure Sound Practices*.

Model approach

P&C insurers with material exposure to earthquake risk are required to use models to estimate their PML. Earthquake models include models licensed from various commercial vendors and maintained in-house or run by third parties on behalf of the insurer or can be an internal estimation technique or model developed by the insurer to OSFI's satisfaction.

OSFI requires that P&C insurers continue to progress to a 500 year PML from earthquakes by 2022. Consequently, OSFI expects an insurer to meet a test of financial preparedness for a 500 year return period country-wide earthquake event by no later than the end of fiscal year 2022.

$$\text{Country-wide PML500} = (\text{East Canada PML500}^{1.5} + \text{West Canada PML500}^{1.5})^{\frac{1}{1.5}},$$

where

- *East Canada PML500* refers to a one in 500 year Eastern Canada event, which represents the 99.8th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Eastern Canada.
- *West Canada PML500* refers to a one in 500 year Western Canada event, which represents the 99.8th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Western Canada.

Recognizing the impact resulting from the new country-wide PML500 requirement, insurers may continue to phase-in their increased earthquake risk exposure until 2022 using the following formula:

[28] The PML amount corresponds to the worldwide exposure for Canadian insurers and Canadian exposure for branches of foreign insurers.

Country-wide PML (Year) = Country-wide PML500 x (Year – 2014)/8 + MAX [East Canada PML420, West Canada PML420] x (2022 – Year)/8,

where

- *Year* is the current reporting year [29](subject to a maximum of 2022)
- *East Canada PML420* refers to a one in 420 year Eastern Canada event, which represents the 99.76th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Eastern Canada. *East Canada PML420* is determined by using linear interpolation between PML 250 and PML500 (i.e. *East Canada PML420* = 0.68xEast Canada PML500 + 0.32xEast Canada PML250).
- *West Canada PML420* refers to a one in 420 year Western Canada event, which represents the 99.76th percentile of the exceedance probability curve plus appropriate adjustments for data quality, model uncertainty, non-modelled business etc., using exceedance probability curves based only on earthquake risk exposure in Western Canada. *West Canada PML420* is determined by using linear interpolation between PML 250 and PML500 (i.e. *West Canada PML420* = 0.68xWest Canada PML500 + 0.32xWest Canada PML250).

<u>*Standard approach*</u>

P&C insurers should use the following standard formula for calculating their PML if:

- The insurer does not use an earthquake model for calculating its PML, or
- An earthquake risk exposure estimation technique is not to OSFI's satisfaction

Country-wide PML = Maximum (East Canada PTIV – applicable policyholder deductibles, West Canada PTIV – applicable policyholder deductibles),

where

PTIV is the property total insured value for earthquake risk exposure, which includes building, contents, outbuildings, additional living expenses and business interruption.

4.5.1.2. Financial Resources

An insurer must have adequate financial resources to cover its earthquake risk exposure calculated in section 4.5.1.1. Financial resources that can be used to support the insurer's earthquake risk exposure include:

- capital & surplus;
- earthquake premium reserve;
- reinsurance coverage; and

[29] Current reporting year is the financial reporting year being filed.

- capital market financing.

➢ *Capital and Surplus*

Insurers can count up to a maximum of 10% of capital and surplus as part of their financial resources to cover their earthquake risk exposure. This maximum limit is subject to supervisory discretion and can be lowered to an amount less than 10% of capital and surplus.

For Canadian P&C insurers, the amount of capital and surplus corresponds to a maximum of 10% of total equity as at the end of the reporting period being filed.

A Canadian branch of a foreign P&C insurer may use up to 10% of its worldwide capital and surplus to cover its earthquake risk exposure; however, it must be able to demonstrate that after an event, at least 10% of the worldwide capital and surplus is still available to meet its obligations to Canadian policyholders. The amount of worldwide capital and surplus corresponds to the Canadian dollar amount as at the end of the most recent reporting period filed in the home jurisdiction.

➢ *Earthquake Premium Reserve*

Earthquake Premium Reserve (EPR) is the voluntary accumulation of earthquake premiums. This amount must not exceed the country-wide PML500[30].

- In the case where the earthquake coverage premium is implicitly included in an overall policy premium, the insurer should be able to demonstrate the reasonableness of the premium allocation specifically attributed to earthquake coverage. As an example, in the case of catastrophic reinsurance coverage not specific to earthquake risk, an allocation of the premium amount must be made and the reasonableness of the reinsurer's premium allocation must be demonstrated.
- Any earthquake premium contributed to the EPR must remain in the EPR unless there is a material decrease in the exposure.
- Should an earthquake occur and trigger claims, companies would establish an unpaid claims provision as well as a provision for claims adjustment expenses. The EPR component would be reduced by an amount equal to the claims reserves.
- Any reduction in the EPR should be brought back into unappropriated surplus immediately.
- The EPR is a component of the reserves amount reported on the balance sheet.

➢ *Reinsurance Coverage*

The estimated reinsurance coverage available should be based on reinsurance in force on the day immediately following the end of the financial reporting period and should be equal to an amount of reinsurance collectable for a loss of the size of the PML, net of retention (e.g., policies in force on July 1 for MCT calculations as at June 30).

[30] Refer to the Canadian *Income Tax Act* for the annual contribution limit.

➢ *Capital Market Financing*

Prior supervisory approval from OSFI is required before these instruments can be recognized as a financial resource in the calculation of the earthquake risk formula. Refer to Guideline B-9 *Earthquake Exposure Sound Practices* for additional information.

4.5.1.3. Earthquake Reserve Component

Earthquake Reserve Component (ERC) is an additional component used to cover an insurer's earthquake risk exposure not covered by the financial resources. The formula to compute the ERC is as follows:

ERC = {Country-wide PML500 x (Year - 2014)/8 + MAX [East Canada PML420, West Canada PML420] x (2022 - Year)/8} - capital and surplus - reinsurance coverage - capital market financing - EPR

- Should an earthquake occur and trigger claims, companies would establish an unpaid claims provision as well as a provision for claims adjustment expenses. The ERC component would be reduced after the EPR, by an amount equal to the claims reserves.
- Any reduction in the ERC should be brought back into unappropriated surplus immediately.
- The ERC is a component of the reserves amount reported on the balance sheet.

4.5.2. Nuclear reserve

P&C insurers issuing nuclear risk policies are required to record an additional provision of 100% of net premiums written, net of commissions, multiplied by 1.25. This provision must be held by the P&C insurer for twenty years, after which it may be reversed.

4.6. Accident and Sickness Business

Accident and sickness reserves determined by actuaries in their valuations are primarily intended to cover expected variations in these requirements based on assumptions about mortality and morbidity. Margins on premiums and unpaid claims for accident and sickness insurance are included in the MCT to take into account possible abnormal negative variations in actual requirements.

The premiums margin is calculated by applying a factor to annual earned premiums. Generally, the factor varies with the length of the premium guarantee remaining. For Canadian P&C insurers, a margin for deferred policy acquisition expenses (DPAE) arising from commissions is also required and is calculated by multiplying DPAE commissions, net of an adjustment for unearned commissions, by 45%. The unpaid claims margin is calculated by applying a factor to the unpaid claims experience relating to prior years. Generally, the factor varies with the length of benefit period remaining.

Instructions for calculating the margin required for accident and sickness business are included in this section. The total requirement calculated should be included in the amount reported as the margin required for unpaid claims and premium liabilities in the MCT.

Instructions for calculating the margin required

Mortality/morbidity risk for accident and sickness insurance is the risk that the liability assumptions about mortality and morbidity rates will be wrong.

To compute the mortality/morbidity component, a factor is applied to the measure of the exposure to the risk. The resulting values are added to arrive at the premiums and unpaid claims margin requirements.

The factors used in deriving the risk component vary with the guaranteed term remaining in the exposure measure. The measure of the exposure to risk is as follows:

Risk	Measure of Exposure	Applicable Guaranteed Term
Disability Income, New Claims Risk	Annual net earned premiums	the length of the premium guarantee remaining
Disability Income, Continuing Claims Risk	Disability income net reserves relating to claims of prior years	the length of the benefit period remaining
Accidental Death and Dismemberment	Net amount at risk = the total net face amount of insurance less the policy liabilities (even if negative)	the period over which the mortality cost cannot be changed (limited to the remaining period to expiry or maturity)

1. Disability income insurance

The additional risks associated with non-cancellable guaranteed premium business should be recognized. As well, increased volatility is characteristic of disability income insurance, as compared to medical and dental expense reimbursement business.

Premium margin

The premium component relates to claims arising from the current year's coverage, and includes the risks of incidence and claims continuance. The factors applied to the measure of exposure are as follows:

Percentage of Annual Earned Premiums[31]		Length of Premium Guarantee Remaining
Individually Underwritten	Other	
15%	15%	less than or equal to 1 year
25%	31.25%	greater than 1 year, but less than or equal to 5 years
37.5%	50%	greater than 5 years

Unpaid claims margin

The unpaid claims component covers the risk of claims continuance arising from coverage provided in prior years. The factor applies to disability income claim reserves related to claims incurred in prior years, including the portion of the provision for incurred but unreported claims. The factor applied to the measure of risk exposure is as follows:

Duration of Disability			Length of Benefit Period Remaining
less than or equal to 2 years	greater than 2 years but less than or equal to 5 years	greater than 5 years	
5.0%	3.75%	2.5%	**less than or equal to 1 year**
7.5%	5.625%	3.75%	**greater than 1 year but less than or equal to 2 years**
10.0%	7.5%	5.0%	**greater than 2 years or lifetime**

2. Accidental death and dismemberment

To compute the components for accidental death and dismemberment, the following factors are applied to the net amount at risk:

Type		Factor	Guaranteed Term Remaining
Participating	Group	.019%	less than or equal to 1 year
	All other	.038%	All
Non-participating *Individual*	Adjustable	.038%	All
	All other	.019%	less than or equal to 1 year
		.038%	greater than 1 year but less than or equal to 5 years
		.075%	greater than 5 years, whole life, and all life insurance continued on disabled lives without payment of premiums
Non-participating *Group*	All	.019%	less than or equal to 1 year
		.038%	greater than 1 year but less than or equal to 5 years
		.075%	greater than 5 years, whole life, and all life insurance continued on disabled lives without payment of premiums

[31] For travel insurance, annual earned premiums should be considered revenue premiums.

For participating business without meaningful dividends, and participating adjustable policies where mortality adjustability is not reasonably flexible, the factors for all other non-participating business should be used.

If current premium rates are significantly less than the maximum guaranteed premium rates, the guarantee term used is that applicable to the current rates.

Additional adjustments are according to group insurance. They are as follows:

- The above factors may be multiplied by 50% for any group benefit that carries one of the following features: 1) a "guaranteed no risk", 2) deficit repayment by policyholders, or 3) "hold harmless" agreement where the policyholder has a legally enforceable debt to the insurer.
- No component is required for "Administrative services only" group cases where the insurer has no liability for claims.

Only "all cause" policies solicited by mail should be included in this section for automobile and common carrier accidental death and dismemberment. Specific accident perils included in accidental death and dismemberment policies solicited by mail, and "free" coverages on premium credit card groups, should be included in the "Other accident and sickness benefits" section.

3. Other accident and sickness benefits

Premium margin

The component requirement is 15% of annual earned premiums.

Unpaid claims margin

The component requirement is 12.5% of the provision for incurred but unpaid claims relating to prior years. The use of prior years avoids a double component requirement for incurred but unpaid claims arising from coverage purchases by premiums paid in the current year.

4. Special policyholder arrangements

For group insurance deposits in excess of liabilities, excluding the liability for such deposits may reduce the component requirement on any policy to a minimum of zero. Such deposits must be:

- made by policyholders;
- available for claims payment (e.g., claim fluctuation and premium stabilization reserves, and accrued provision for experience refunds); and
- returnable, net of applications, to policyholders on policy termination.

Chapter 5. Market Risk

Market risk arises from potential changes in rates or prices in various markets such as for interest rates, foreign exchange rates, equities, real estate, and other market risk exposures. Exposure to this risk results from trading, investing, and other business activities, which create on- and off-balance sheet positions.

Investments in mutual funds or other similar assets must be broken down by type of investment (bonds, preferred shares, common shares, etc.) and assigned the appropriate risk factor relating to the investment. If these investments are not reported on a prorated basis, then the factor of the riskiest asset held in the fund is assigned to the entire investment.

5.1. Interest Rate Risk

Interest rate risk represents the risk of economic loss resulting from market changes in interest rates and the impact on interest rate sensitive assets and liabilities. Interest rate risk arises due to the volatility and uncertainty of future interest rates.

Assets and liabilities whose value depends on interest rates are affected. Interest rate sensitive assets include fixed income assets. Interest rate sensitive liabilities include those for which the values are determined using a discount rate.

To compute the interest rate risk margin, a duration and an interest rate shock factor are applied to the fair value of interest rate sensitive assets and liabilities. The interest rate risk margin is the difference between the change in the value of interest rate sensitive assets and the change in the value of interest rate sensitive liabilities, taking into account the change in the value of recognized interest rate derivative contracts, as appropriate.

5.1.1. General requirements

The components used to calculate the interest rate risk margin are as follows.

5.1.1.1. Interest rate sensitive assets

The interest rate sensitive assets to be included in the calculation of the interest rate margin are those for which their fair value will change with movements in interest rates. Although certain assets, for example loans and bonds held to maturity, may be reported on the balance sheet on an amortized cost basis, their economic value, and changes in that value, are to be considered for interest rate risk margin purposes. Interest rate sensitive assets include:

- term deposits and other similar short-term securities (excluding cash),
- bonds and debentures,
- commercial paper,
- loans,

- mortgages (residential and commercial),
- mortgage-backed and asset-backed securities (MBS and ABS),
- preferred shares, and
- interest rate derivatives held for other than hedging purposes.

Investments in mutual funds and other similar assets should be broken down by type of investment (bond, preferred share, common shares, etc.). The assets in the fund that are interest rate sensitive are to be included in the determination of the fair value of the P&C insurer's total interest rate sensitive assets.

Other assets, such as cash, investment income due and accrued, common shares and investment properties, are not to be included in the determination of the value of interest rate sensitive assets. Such assets are assumed for interest rate risk margin determination purposes to be insensitive to movements in interest rates.

Branches of foreign companies are to include only vested interest rate sensitive assets and interest rate sensitive assets included as adjustments to net assets available in the determination of the margin for interest rate risk.

5.1.1.2. Interest rate sensitive liabilities

The interest rate sensitive liabilities to be included in the calculation of the interest rate risk margin are those for which their fair value will change with movements in interest rates. The following liabilities are considered sensitive to interest rates and are to be included:

- net unpaid claims and adjustment expenses,
- net premium liabilities, and
- liabilities due to reinsurers under funds withheld reinsurance arrangements

P&C insurers must obtain OSFI's supervisory approval in order to include other liabilities in the calculation of interest rate risk margin.

Net unpaid claims and adjustment expenses, which include PfADs, are net of reinsurance, salvage and subrogation, and self-insured retentions. Net premium liabilities, which also include PfADs, are after reinsurance recoverables.

5.1.1.3. Allowable interest rate derivatives

Interest rate derivatives are those for which the cash flows are dependent on future interest rates. They may be used to hedge a P&C insurer's interest rate risk and as such may be recognized in the determination of the margin required for interest rate risk, subject to the conditions below.

Only plain-vanilla interest rate derivatives that clearly serve to offset fair value changes in a company's capital position due to changes in interest rates may be included in the interest rate risk calculation. Plain-vanilla interest rate derivative instruments are limited to the following:

- interest rate and bond futures,
- interest rate and bond forwards, and
- single-currency interest rate swaps.

Other interest rate derivatives, including interest rate options, caps and floors are not considered plain-vanilla and may not be recognized in the determination of the interest rate risk margin.

P&C insurers must understand the interest rate hedging strategies that they have in place and be able to demonstrate to OSFI, upon request, that the underlying hedges decrease interest rate risk exposure and that the addition of such derivatives does not result in overall increased risk. For example, P&C insurers are expected to be able to demonstrate that they have defined the hedging objectives, the class of risk being hedged, the nature of the risk being hedged, the hedge horizon, and have considered other factors, such as the cost and liquidity of the hedging instruments. In addition, the ability to demonstrate an assessment, retrospectively or prospectively, of the performance of the hedge would be appropriate. If the P&C insurer cannot demonstrate that the derivatives result in decreased overall risk, then additional capital may be required, and companies in this situation should contact OSFI for details.

Derivatives used for hedging a P&C insurer's interest rate risk are subject to credit risk requirements. Refer to section 6.2 for further details.

5.1.1.4. Duration of interest rate sensitive assets and liabilities

P&C insurers are required to calculate the duration of the interest rate sensitive assets and liabilities for the purpose of the interest rate risk requirement calculation. The duration of an asset or a liability is a measure of the sensitivity of the value of the asset or liability to changes in interest rates. More precisely, it is the percentage change in an asset or liability value given a change in interest rates.

The calculation of duration for an asset or liability will depend on the duration measure chosen and whether the cash flows of the asset or liability are themselves dependent on interest rates. *Modified duration* is a duration measure in which it is assumed that interest rate changes do not change the expected cash flows. *Effective duration* is a duration measure in which recognition is given to the fact that interest rate changes may change the expected cash flows.

A P&C insurer may use either modified duration or effective duration to calculate the duration of its assets and liabilities. However, the duration methodology chosen should apply to all interest rate sensitive assets and liabilities under consideration and the same methodology must be used consistently from year to year (i.e. "cherry-picking" is not permitted).

The cash flows associated with interest rate derivatives are sensitive to changes in interest rates and therefore the duration of an interest rate derivative must be determined using effective

duration. In particular, if a company has interest rate derivatives on its balance sheet that lie within the scope of section 5.1.1.3, then it must use effective duration for all of its interest rate sensitive assets and liabilities.

The *portfolio duration* (modified or effective) can be obtained by calculating the weighted average of the duration of the assets or the liabilities in the portfolio.

The *dollar duration* of an asset or liability is the change in dollar value of an asset or liability for a given change in interest rates.

5.1.1.5. Modified duration

Modified duration is defined as the approximate percentage change in the present value of cash flows for a 100 basis point change in the annually compounded yield rate, assuming that expected cash flows do not change when interest rates change.

Modified duration can be written as:

$$\text{Modified duration} = \frac{1}{1+\text{Yield}} \times \frac{\Sigma\, t \times PVCF_t}{\text{Market Value}}$$

where,

Yield = the annually compounded yield to maturity of the cash flows,
$PVCF_t$ = the present value of the cash flow at time t discounted at the yield rate, and

the sum in the numerator is taken over all times *t* at which a cash flow occurs.

5.1.1.6. Effective duration

Effective duration is a duration measure in which recognition is given to the fact that interest rate changes may change the expected cash flows. Although modified duration will give the same estimate of the percentage fair value change for an option-free series of cash flows, the more appropriate measure for any series of cash flows with an embedded option is effective duration.

Effective duration is determined as follows:

$$\text{Effective duration} = \frac{\text{Fair value if yields decline} - \text{fair value if yields rise}}{2 \times (\text{initial price}) \times (\text{change in yield in decimal})}$$

where,

Δy = change in yield in decimal
V_0 = initial fair value
V_- = fair value if yields decline by Δy
V_+ = fair value if yields increase by Δy,

then effective duration is as follows:

$$\frac{V_- - V_+}{2 \times (V_0) \times (\Delta y)}$$

5.1.1.7. Portfolio duration

The duration of a portfolio of interest rate sensitive assets or liabilities is to be determined by calculating the weighted average of the duration of the assets or liabilities in the portfolio. The weight is the proportion of the portfolio that a security comprises. Mathematically, a portfolio's duration is calculated as follows:

$$w_1D_1 + w_2D_2 + w_3D_3 + \ldots + w_kD_K$$

where,

w_i = fair value of security i/fair value of the portfolio
D_i = duration of security i
K = number of securities in the portfolio.

5.1.1.8. Dollar fair value change

Modified and effective duration are related to percentage fair value changes. The interest rate risk requirements depend on determining the adjustment to the fair value of interest rate sensitive assets and liabilities for dollar fair value changes. The dollar fair value change can be measured by multiplying duration by the dollar fair value and the number of basis points (in decimal form). In other words,

Dollar fair value change = duration x dollar fair value x interest rate change (in decimal)

5.1.1.9. Duration of allowable interest rate derivatives

Effective duration is the appropriate measure that should be used when assets or liabilities have embedded options. For portfolios with eligible plain-vanilla interest rate derivatives, P&C insurers should be using effective dollar duration because the insurer is hedging the dollar interest rate risk exposure.

Example 5-1: Effective dollar duration of a swap

Assuming a P&C insurer has a longer duration for its interest rate sensitive assets and a shorter duration for its interest rate sensitive liabilities, the current dollar duration position of the P&C insurer, prior to taking into consideration any interest rate derivatives, is effectively as follows:

P&C insurer's dollar duration = dollar duration of assets – dollar duration of liabilities > 0

The P&C insurer enters into a single-currency interest rate swap in which it pays fixed-rate and receives floating-rate. The dollar duration of a swap for a fixed-rate payer can be broken down as follows:

Effective dollar duration of a swap for a fixed-rate payer	=	effective dollar duration of a floating-rate bond – effective dollar duration of a fixed rate bond

Assuming the dollar duration of the floating-rate bond is near zero, then

Effective dollar duration of a swap for a fixed-rate payer	=	0 – effective dollar duration of a fixed-rate bond

The dollar duration of the swap position is negative; therefore, adding the swap position reduces the company's dollar duration of assets and moves the P&C insurer's overall dollar duration position closer to zero.

5.1.2. Interest rate risk margin

The interest rate risk margin is determined by measuring the economic impact on the P&C insurer of a Δy change in interest rates. The Δy interest rate shock factor is 1.25% (Δy = 0.0125).

A. The estimated change in the interest rate sensitive asset portfolio for an interest rate shock factor increase of Δy is determined as follows:

Dollar fair value change of the interest rate sensitive asset portfolio	=	(Duration of interest rate sensitive asset portfolio) x Δy x (Fair value of interest rate sensitive asset portfolio)

B. The change in the interest rate sensitive liabilities for an interest rate shock factor increase of Δy is determined as follows:

Dollar fair value change of the interest rate sensitive liabilities	=	(Duration of interest rate sensitive liabilities) x Δy x (Fair value of interest rate sensitive liabilities)

C. The change in the allowable interest rate derivatives for the interest rate shock factor increase of Δy is determined as follows:

Effective dollar duration of the allowable interest rate derivatives portfolio	=	sum of the effective dollar duration of the allowable interest rate derivatives for a Δy increase in interest rates

D. The capital requirement for an interest rate shock factor increase of Δy is determined as the greater of zero and A – B + C.

E. Steps A through C are repeated for an interest rate shock factor decrease of Δy (i.e. -Δy) and the capital requirement for an interest rate decrease of Δy is the greater of zero and A – B + C.

F. The interest rate risk margin is then determined as the maximum of D or E.

5.2. Foreign Exchange Risk

The foreign exchange risk margin is intended to cover the risk of loss resulting from fluctuations in currency exchange rates and is applied to the entire business activity of the P&C insurer.

5.2.1. General requirements

Two steps are necessary to calculate the foreign exchange risk margin. The first is to measure the exposure in each currency position. The second is to calculate the capital requirement for the portfolio of positions in different currencies.

The foreign exchange risk margin is 10% of the greater of:

i.) the aggregate net long positions in each currency, adjusted by effective allowable foreign exchange rate hedges if any are used, and

ii.) the aggregate net short positions in each currency, adjusted by effective allowable foreign exchange rate hedges if any are used,

where effective allowable foreign exchange rate hedges are limited to plain-vanilla foreign currency derivatives such as futures and forward foreign currency contracts and currency swaps.

Investments in mutual funds and other similar assets should be broken down by type of investment (bonds, preferred shares, common shares, etc.) for calculating foreign exchange risk margin. The assets in the fund that are denominated in a foreign currency are to be included in the calculation to determine the capital requirement for each currency position. In cases where a claim liability is recorded in Canadian dollars but the settlement of the claim will be made in a foreign currency, the liability must be included in the calculation of the foreign exchange risk margin.

5.2.2. Foreign exchange risk margin

Step 1: Measuring the exposure in a single currency

<u>The net open position for each currency is calculated by summing:</u>

- the net spot position, defined as all asset items less all liability items denominated in the currency under consideration, including accrued interest and accrued expenses if they are subject to exchange rate fluctuations;
- the net forward position (i.e. all net amounts under forward foreign exchange transactions, including currency futures and the principal on currency swaps), valued at current spot market exchange rates or discounted using current interest rates and translated at current spot rates;
- guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;

- net future income/expenses not yet accrued but already fully hedged (at the discretion of the reporting institution); and
- any other item representing a profit or loss in foreign currencies.

Adjustments:

For P&C insurers with foreign operations, those items that are currently deducted from capital available in calculating the MCT ratio and are denominated in the corresponding currency may be excluded from the calculation of net open currency positions, to a maximum of zero. For example:

- Goodwill and other intangibles;
- Interests in non-qualifying subsidiaries, associates and joint ventures; and
- Non-allowable foreign exchange rate hedges that are not considered in capital available.

Carve-out:

A P&C insurer with a net open long position in a given currency may reduce the amount of the net exposure, to a maximum of zero, by the amount of a carve-out, which is equivalent to a short position of up to 25% of the liabilities denominated in the corresponding currency.

Step 2: Calculating the capital requirement for the portfolio

The nominal amount (or net present value) of the net open position in each foreign currency calculated in *step 1* is converted at a spot rate into Canadian dollars. The gross capital requirement is 10% of the overall net open position, calculated as the greater of:

- the sum of the net open long positions; and
- the absolute value of the sum of the net open short positions.

Example:

A P&C insurer has $100 of U.S. assets and $50 of U.S. liabilities.

- The net spot position, defined as assets less liabilities, is a long position of $50.
- The carve-out, using 25% of liabilities, is:

  = 25% * 50

  = 12.5
- Therefore, the foreign exchange risk margin is:

  = 10% * MAX[32] ((net spot position - carve-out), 0)

  = 10% * MAX ((50 – 12.5), 0)

[32] The carve-out can be used to reduce the net open long currency position to a minimum of zero.

= 10% * 37.5

= 3.75

5.2.2.1. Allowable foreign currency hedges

Foreign currency derivatives are those for which the cash flows are dependent on future foreign exchange rates. They may be used to hedge an insurer's foreign exchange risk and as such, may be recognized in the determination of the capital requirement for foreign exchange risk, subject to the following requirements.

Only effective hedges that offset the changes in fair value of the hedged item may be included in the foreign exchange risk calculation. The company must be able to demonstrate to OSFI the effectiveness of its foreign exchange hedges.

Companies with foreign currency derivatives on their balance sheet must be able to demonstrate that the addition of such derivatives does not result in increased risk. If the insurer cannot demonstrate that the derivatives do not result in increased risk, then OSFI may require additional capital.

Only plain-vanilla foreign currency derivatives may be recognized in the calculation of the foreign exchange capital requirement. Plain-vanilla foreign currency derivative instruments are limited to the following:

- futures foreign currency contracts,
- forward foreign currency contracts, and
- currency swaps.

Other foreign currency derivatives, including options on foreign currencies, are not considered plain-vanilla and are not to be recognized in the determination of the foreign exchange risk margin.

Derivatives used for hedging a P&C insurer's foreign exchange risk are subject to credit risk requirements. Refer to section 6.2 for further details.

5.2.2.2. Measurement of forward currency positions

Forward currency positions should be valued at current spot market exchange rates. It would not be appropriate to use forward exchange rates since they partly reflect current interest rate differentials. Companies that base their normal management accounting on net present values are expected to use the net present values of each position, discounted using current interest rates and translated at current spot rates, for measuring their forward currency positions.

5.2.2.3. Accrued and unearned interest income and expenses

Accrued interest, accrued income and accrued expenses should be treated as a position if they are subject to exchange rate fluctuations. Unearned but expected future interest, income or expenses

may be included, provided the amounts are certain and have been fully hedged by allowable forward foreign exchange contracts. Companies must be consistent in their treatment of unearned interest, income and expenses and must have written policies covering the treatment. The selection of positions that are only beneficial to reducing the overall position will not be permitted for capital purposes.

5.2.2.4. Unregistered reinsurance

A separate component calculation must be performed for each group of liabilities ceded to an unregistered reinsurer that is backed by a distinct pool of assets, where the defining characteristic of the pool is that any asset in the pool is available to pay any of the corresponding liabilities. Each calculation should take into consideration the ceded liabilities, the assets supporting them, and deposits placed by the reinsurer to cover the capital requirement for the ceded liabilities if the deposits are in a currency different from the currency in which the ceded liabilities are payable to policyholders. If some of the assets supporting the liabilities ceded to an unregistered reinsurer are held by the ceding company (e.g. funds withheld), the company's corresponding liability should be treated as an asset in the calculation of the open positions for the ceded business.

Excess deposits placed by an unregistered reinsurer within a pool of supporting assets may be used to reduce the foreign exchange risk requirement for the corresponding ceded business to a minimum of zero. Any requirements not covered by excess deposits must be added to the ceding company's own requirement.

5.3. Equity Risk

Equity risk is the risk of economic loss due to fluctuations in the value of common shares and other equity securities.

5.3.1. Common shares and joint ventures

A 30% risk factor applies to investments in common shares and joint ventures in which a company holds less than or equal to 10% ownership interest.

5.3.2. Futures, forwards, and swaps

Equity futures, forwards, and swaps attract a 30% risk factor, which is applied to the market value of the underlying equity security or index. Where a swap exchanges a return on an equity security or index for a return on a different equity security or index, a 30% risk factor applies to the market value of both equity securities or indices for which the returns are being exchanged.

Example:

A P&C insurer has entered into a one-year swap during which it will pay the 3-month Canadian Dollar Offered Rate (CDOR) plus fees, and receive the total return on a notional index of equities that was worth 100 at the time of inception. The index of equities is currently worth 110. A 30% equity risk charge will apply to 110 for the long position in the index, but no capital

charge will be required on the short position in the bond because such a position is not subject to an equity risk charge.

In addition to the capital requirements set out in this section, futures, forwards, and swaps are subject to credit risk requirements. Refer to section 6.2 for further details

5.3.3. Short positions

The capital requirements for short positions in common shares, equity futures, forwards, and swaps that do not wholly or partially offset a long equity position are determined by assuming the instrument is held long and then applying the corresponding risk factor. Common shares, futures, forwards, and swaps eligible for offset recognition and the corresponding capital treatment are described in section 5.3.4.

5.3.4. Recognition of equity hedges

Equity futures, forwards, and swaps, as well as common shares can be used to wholly or partially hedge an equity exposure. P&C insurers may recognize qualifying equity hedges in the calculation of the capital requirements in accordance with section 5.3.4.1 and 5.3.4.2.

P&C insurers must document the equity hedging strategies employed and demonstrate that the hedging strategies decrease the overall risk. The documentation must be available for review, upon request. If the P&C insurer cannot demonstrate, to the satisfaction of the Superintendent, that the hedging strategies result in decreased overall risk, then additional capital above that calculated as per sections 5.3.4.1 and 5.3.4.2 may be required, at the discretion of the Superintendent.[33]

For hedges to qualify, they must be issued by an entity that:

- issues obligations which attract a 0% factor under section 6.1.2; or
- is rated A- or better (including clearing houses rated A- or better).

5.3.4.1. Identical equity securities or indices

Long and short positions in exactly the same underlying equity security or index may be considered to be offsetting so that the capital requirements are calculated for the net exposure only. Individual instruments of portfolios that qualify for the capital treatment under section 5.3.4.2 cannot be carved out of the portfolios to receive the capital treatment of section 5.3.4.1.

Only common shares and plain-vanilla equity futures, forwards, and swaps can obtain the capital treatment under this section. Exotic equity derivatives[34] do not qualify for this treatment.

[33] An insurer may contact OSFI to discuss the adequacy of its documentation and/or risk assessment to assess the likelihood or amount of potential additional capital that may be required.

[34] An example of an exotic derivative would be one that has a discontinuous payoff structure.

5.3.4.2. Closely linked equity securities or indices

A portfolio of common shares and equity futures, forwards, and swaps can be used to partially hedge the equity exposure of another portfolio of similar instruments. When the instruments contained in both portfolios are closely linked, instead of following the capital requirements set out in sections 5.3.1, 5.3.2, and 5.3.3, P&C insurers may calculate the capital requirements for the combined portfolios in the following manner:

(1- Correlation Factor) × 1.5 × MIN (*market value of the portfolio of hedging instruments, market value of the portfolio of instruments being hedged*)

The capital requirements set out above are capped at 60% of the minimum market value of both portfolios.

The difference between the market value of the two portfolios is not considered a hedged position and is subject to a 30% risk factor.

The Correlation Factor is derived by using:

$$CF = A*(B/C)$$

where:

A represents the historical correlation between the returns on the portfolio of instruments being hedged and the returns on the portfolio of hedging instruments

B represents the minimum of [standard deviation of returns on the portfolio of instruments being hedged, standard deviation of returns on the portfolio of hedging instruments]

C represents the maximum of [standard deviation of returns on the portfolio of instruments being hedged, standard deviation of returns on the portfolio of hedging instruments]

The historical correlations and standard deviations must be calculated on a weekly basis, covering the previous 52-week period. The returns on each portfolio of hedging instruments used to calculate the components of the CF must be determined by assuming that the portfolio is held long. The returns on each portfolio must be measured net of additional capital injections, and must include the returns on each component of the portfolio. For example, the returns on both the long and short legs of a total return swap included in a portfolio must be reflected in the calculation of the CF.

The CF for the previous 52 weeks is required to be calculated for each of the past four quarters. The Correlation Factor is the lowest of the four CFs calculated and is used to calculate capital requirements.

In order for the portfolios to obtain the capital treatment set out in this section, the following conditions must be met:

- The instruments in both portfolios are limited to exchange-traded common shares, and plain-vanilla equity futures, forwards, and swaps where the underlying asset is an exchange-traded common share or an equity index. Portfolios that contain instruments other than those specified in this section will be subject to the capital treatment under sections 5.3.1, 5.3.2, and 5.3.3.
- The CF is determined at the portfolio level. Individual instruments cannot be carved-out of the portfolios and receive the capital treatment as per section 5.3.4.1.
- The portfolios that are part of a hedging strategy must have been established at least two years prior to the reporting date. In addition, the hedging strategy and the active management strategy on which both portfolios are based must not have changed in the past two years prior to the reporting date.[35] Portfolios that have been established for at least two years but have undergone a change in the hedging strategy or active management strategy will attract a 30% risk factor.

Example:

Suppose a portfolio of instruments is valued at $200 and is paired with another portfolio of instruments as part of a qualifying equity hedge. Assuming that the second portfolio is worth $190 and that the Correlation Factor between the two portfolios is 0.95, the total capital charge for both portfolios will be 190 × 5% × 1.5 + $10 × 30% = $17.25.

Portfolios that were established less than two years prior to the reporting date attract the following capital treatment:

1. No recognition of the equity hedge in the first year following the establishment of the portfolios (i.e. a 30% factor is applied to both portfolios); and
2. in the second year, the sum of:
    - T × capital requirements for the combined portfolios using the correlation factor approach described in this section[36]; and
    - (1-T) × capital requirements set out in 1 above.

    T equals 20%, 40%, 60%, and 80% in the first, second, third, and fourth quarter, respectively, of the second year following the establishment of the portfolios.

[35] For the purposes of this section, the hedging strategy and active management strategy together are deemed to be unchanged if the ex-ante equity risk profile of the combined portfolios is maintained. For example, the ex-ante equity risk profile is maintained if the combined beta is continuously targeted to be 0 (the hedging strategy), and if instrument selection is continuously based on the price-earnings ratio (the active management strategy).

[36] For the purposes of this calculation, the Correlation Factor must be determined based on actual portfolio returns (i.e. portfolio returns up to the reporting date). Projected (simulated) returns cannot be used. The Correlation Factor must be determined as the lowest of available 52 week Correlation Factors given the actual history of portfolio returns. During the second year, the number of available 52 week Correlation Factors will increase from one to four as time elapses.

Example:

Two portfolios (as part of an equity hedge), each equal to 100, are established on April 1, 2016. On March 31, 2017, the capital charge for both portfolios will be 30% × 100 + 30% × 100 = 60. On June 30, 2017, assuming that the Correlation Factor is 0.90, the combined portfolios will be subject to a capital charge of 20% × 10% × 1.5 × 100 + 80% × 60% × 100 = 51.

5.4. Real Estate Risk

Real estate risk is the risk of economic loss due to changes in the value of a property or in the amount and timing of cash flows from a property.

The risk factors are as follows:

Owner-occupied properties	10%
Investment properties	20%

For owner-occupied properties, the risk factor is applied to the value using the cost model, excluding any unrealized fair value gains (losses) arising at the conversion to IFRS, or subsequent unrealized fair value gains (losses) due to revaluation.

5.5. Right-of-Use Assets

The risks associated with right-of-use assets are related to fluctuating market lease rates and to potential changes in the amount and timing of cash flows from early cancellation penalities, and costs associated with renegotiating or locating a new lease.

A 10% risk factor is applied to right-of-use assets, determined in accordance with relevant accounting standards, associated with leased owner–occupied properties and associated with leased assets that fall in the category of “other assets” (e.g. equipment).

A 20% risk factor is applied to right-of-use asset, determined in accordance with relevant accounting standards, associated with leased investment properties.

5.6. Other Market Risk Exposures

Other market risk exposures include assets that fall in the category “other assets,” for example, equipment, that are exposed to asset value fluctuations that may result in the value realized upon disposal being less than the balance sheet carrying value. A 10% risk factor applies to other assets as part of the total capital requirements for market risk.

Chapter 6. Credit Risk

Credit risk is the risk of loss arising from a counterparty's potential inability or unwillingness to fully meet its contractual obligations due to an insurer. Exposure to this risk occurs any time funds are extended, committed, or invested through actual or implied contractual agreements. Components of credit risk include loan loss/principal risk, pre-settlement/replacement risk and settlement risk. Counterparties include issuers, debtors, borrowers, brokers, policyholders, reinsurers and guarantors.

All on- and off-balance sheet exposures are subject to a specific risk factor that either: 1) corresponds to the external credit rating of the counterparty or issuer or 2) represents a prescribed factor determined by OSFI. To determine the capital requirements for balance sheet assets, factors are applied to the balance sheet values or other specified values of these assets. To determine the capital requirements for off-balance sheet exposures, factors are applied to the exposure amounts determined according to the section 6.2. Collateral and other forms of credit risk mitigators may be used to reduce the exposure. No risk factors are applied to assets deducted from capital available (reference section 2.3). The resulting amounts are summed to arrive at the credit risk capital requirements.

In respect of invested assets, P&C insurers must comply with OSFI's Guideline B-2 *Investment Concentration Limit for Property and Casualty Insurance Companies*.

6.1. Capital Requirements for Balance Sheet Assets

For the purpose of calculating the capital requirements for credit risk, balance sheet assets should be valued at their balance sheet carrying amounts, with the following exceptions:

- loans carried at fair value under the fair value option, fair value hedge accounting, or available-for-sale accounting, which should be valued at amortized cost; and
- off-balance sheet exposures should be valued in accordance with section 6.2.

6.1.1. Use of ratings

Many of the risk factors in this chapter depend on the external credit rating assigned to an asset or an obligor. In order to use a factor that is based on a rating, a P&C insurer must meet all of the conditions specified in this section. For MCT purposes, P&C insurers may recognize credit ratings from the following rating agencies:

- DBRS
- Fitch Rating Services
- Japan Credit Rating Agency (JCR)
- Kroll Bond Rating Agency (KBRA)
- Moody's Investors Service
- Rating and Investment Information (R&I)
- Standard and Poor's (S&P)

A P&C insurer must choose the rating agencies it intends to rely on and then use their ratings for MCT purposes consistently for each type of asset or obligation. Companies should not select the assessments provided by different rating agencies with the sole intent to reduce their capital requirements (i.e. "cherry picking" is not permitted).

Any rating used to determine a factor must be publicly available, i.e. the rating must be published in an accessible form and included in the rating agency's transition matrix. Ratings that are made available only to the parties to a transaction do not satisfy this requirement.

If a P&C insurer is relying on multiple rating agencies and there is only one assessment for a particular asset or obligor, that assessment should be used to determine the capital requirements. If there are two assessments from the rating agencies used by a P&C insurer and these assessments differ, the P&C insurer should apply the risk factor corresponding to the lower of the two ratings. If there are three or more assessments for an asset or obligor from a P&C insurer's chosen rating agencies, the P&C insurer should exclude one of the ratings that corresponds to the lowest capital requirement, and then use the rating that corresponds to the lowest capital requirement of those that remain (i.e. the P&C insurer should use the second-highest rating from those available, allowing for multiple occurrences of the highest rating).

Where a P&C insurer holds a particular securities issue that carries one or more issue-specific assessments, the capital requirements for the asset or obligor will be based on these assessments. Where a P&C insurer's asset is not an investment in a specifically rated security, the following principles apply:

- In circumstances where the borrower has a specific rating for an issued debt security, but the P&C insurer's asset is not an investment in this particular security, a rating of BBB- or better on the rated security may only be applied to the P&C insurer's unrated asset if this asset ranks pari passu or senior to the rated security in all respects. If not, the credit rating cannot be used and the P&C insurer's asset must be treated as an unrated obligation.
- In circumstances where the borrower has an issuer rating, this assessment typically applies to senior unsecured assets or obligations on that issuer. Consequently, only senior assets or obligations on that issuer will benefit from a BBB- or better issuer assessment; other unassessed assets or obligations on the issuer will be treated as unrated. If either the issuer or one of its issues has a rating of BB+ or lower, this rating should be used to determine the capital requirements for an unrated asset or obligation on the issuer.
- Short-term assessments are deemed to be issue specific. They can only be used to derive capital requirements for assets or obligations arising from the rated facility. They cannot be generalized to other short-term assets or obligations, and in no event can a short-term rating be used to support a risk factor for an unrated long-term asset or obligation.
- Where the risk factor for an unrated exposure is based on the rating of an equivalent exposure to the borrower, foreign currency ratings should be used for exposures in foreign currency. Canadian currency ratings, if separate, should only be used to determine the capital requirements for assets or obligations denominated in Canadian currency.

The following additional conditions apply to the use of ratings:

- External assessments for one entity within a corporate group may not be used to determine the risk factors for other entities within the same group.
- No rating may be inferred for an unrated entity based on assets that the entity possesses.
- In order to avoid the double counting of credit enhancement factors, companies may not recognize credit risk mitigation if the credit enhancement has already been reflected in the issue-specific rating.
- A P&C insurer may not recognize a rating if the rating is at least partly based on unfunded support (e.g. guarantees, credit enhancement or liquidity facilities) provided by the P&C insurer itself or one of its associates.
- Any assessment used must take into account and reflect the entire amount of credit risk exposure a P&C insurer has with regard to all payments owed to it. In particular, if a P&C insurer is owed both principal and interest, the assessment must fully take into account and reflect the credit risk associated with repayment of both principal and interest.
- P&C insurers may not rely on unsolicited ratings in determining the risk factors for an asset, except where the asset is a sovereign exposure and a solicited rating is not available.

6.1.2. Credit risk factors

Various risk factors are applied to invested assets depending on the external credit rating and the remaining term to maturity as outlined below.

Investments in mutual funds or other similar assets must be broken down by type of investment (bonds, preferred shares, etc.) and assigned the appropriate risk factor relating to the investment. If these investments are not reported on a prorated basis, then the factor of the riskiest asset held in the fund, is assigned to the entire investment.

6.1.2.1. Long-term obligations

Long-term obligations, including term deposits, bonds, debentures, and loans that are not eligible for a 0% risk factor attract risk factors according to the following table. Long-term obligations generally have an original term to maturity at issue of 1 year or more.

Long-Term Obligations			
Rating	**Remaining Term to Maturity**		
	1 year or less	**Greater than 1 year up to and including 5 years**	**Greater than 5 years**
AAA	0.25%	0.50%	1.25%
AA+ to AA-	0.25%	1.00%	1.75%
A+ to A-	0.75%	1.75%	3.00%
BBB+ to BBB-	1.50%	3.75%	4.75%
BB+ to BB-	3.75%	7.75%	8.00%
B+ to B-	7.50%	10.50%	10.50%
Unrated	6.00%	8.00%	10.00%
Below B-	15.50%	18.00%	18.00%

- Remaining term to maturity denotes the number of years from the reporting date until the maturity date.
- P&C insurers may use effective maturity as an option for determining risk factors for investments in long-term obligations subject to a determined cash flow schedule. The following formula may be used to calculate effective maturity:

$$\textit{Effective Maturity (M)} = \frac{\sum_t t \times CF_t}{\sum_t CF_t},$$

  where CF_t denotes the cash flows (principal, interest payments and fees) contractually payable by the borrower in period t.
- In cases where a P&C insurer elects not to calculate an effective maturity or if it is not feasible to do so using the above formula, the insurer is required to use the maximum remaining time (in years) that the borrower is permitted to fully discharge its contractual obligation (principal, interest, and fees) under the terms of the loan agreement. Normally, this would correspond to the nominal maturity or term to maturity of the instrument.
- Where information is not available to determine the redemption/maturity of an asset, P&C insurers must use the "greater than 5 years" category for that asset.

6.1.2.2. Short-term obligations

Short-term obligations, including commercial paper, that are not eligible for a 0% risk factor have risk factors assigned according to the following table. Short-term obligations generally have an original term to maturity at issue of no more than 365 days.

Short-Term Obligations	
Rating	**Factor**
A-1, F1, P-1, R-1 or equivalent	0.25%
A-2, F2, P-2, R-2 or equivalent	0.50%
A-3, F3, P-3, R-3 or equivalent	2.00%
Unrated	6.00%
All other ratings, including non-prime and B or C ratings	8.00%

6.1.2.3. Asset-backed securities

The category of asset-backed securities encompasses all securitizations, including collateralized mortgage obligations and mortgage-backed securities, as well as other exposures that result from stratifying or tranching an underlying credit exposure. For exposures that arise as a result of asset securitization transactions, insurers should refer to Guideline B-5: *Asset Securitization*[37] to determine whether there are functions provided (e.g., credit enhancement and liquidity facilities) that require capital for credit risk.

National Housing Act (NHA) mortgage-backed securities:

NHA mortgage-backed securities that are guaranteed by Canada Mortgage Housing Corporation (CMHC) receive a factor of 0% to recognize the fact that obligations incurred by CMHC are legal obligations of the Government of Canada.

Other asset-backed securities:

The capital requirements for all other asset-backed securities are based on their external ratings. In order for an insurer to use external ratings to determine a capital requirement, the P&C insurer must comply with all of the operational requirements for the use of ratings in Guideline B-5: *Asset Securitization*.

For asset-backed securities (other than resecuritizations) rated BBB or higher, the capital requirement is the same as the requirement specified in subsection 6.1.2.1 for a long-term obligation having the same rating and maturity as the asset-backed security. If an asset-backed security is rated BB, a P&C insurer may recognize the rating only if it is a third-party investor in the security. The credit risk factor for an asset-backed security (other than a resecuritization) rated BB in which a company is a third-party investor is 300% of the requirement for a long-term obligation rated BB having the same rating and maturity as the security.

The credit risk factors for short-term asset-backed securities (other than resecuritizations) rated A-3 or higher are the same as those in subsection 6.1.2.2 for short-term obligations having the same rating.

The credit risk factor for any resecuritization rated BBB or higher is 200% of the risk factor applicable to an asset-backed security having the same rating and maturity as the resecuritization.

The credit risk factor for securitization exposures classified within the highest risk category of securitization exposures, as defined in Guideline B-5: *Asset Securitization*, is 60%.

The credit risk factor for any asset-backed security that is not mentioned above (including unrated securities and any asset-backed security that is rated lower than BB) is 60%.

[37] Guideline B-5 should be read in conjunction with any current Advisories concerning securitization (e.g., the October 2008 Advisory, *Securitization – Expected Practices*).

6.1.2.4. Preferred shares

Risk factors for preferred shares should be assigned according to the following table:

Preferred Shares	
Rating	**Factor**
AAA, AA+ to AA-, Pfd-1, P-1 or equivalent	3.00%
A+ to A-, Pfd-2, P-2 or equivalent	5.00%
BBB+ to BBB-, Pfd-3, P-3 or equivalent	10.00%
BB+ to BB-, Pfd-4, P-4 or equivalent	20.00%
B+ or lower, Pfd-5, P-5 or equivalent or unrated	30.00%

6.1.2.5. Other balance sheet assets

Other risk factors for balance sheet assets:

Factor	Asset
0.00%	• Cash held on the company's own premises[38], • Obligations[39] of federal, provincial, and territorial governments in Canada, • Obligations of agents of the federal, provincial or territorial governments in Canada whose obligations are, by virtue of their enabling legislation, direct obligations of the parent government, • Obligations of sovereigns rated AA- or better and their central banks[40], • Obligations that have been explicitly, directly, irrevocably and unconditionally guaranteed by a government entity eligible for a 0% risk factor including, for example, residential mortgages insured under the NHA or equivalent provincial mortgage insurance program and NHA mortgage-backed securities that are guaranteed by the Canada Mortgage and Housing Corporation, • Instalment premiums receivable (not yet due), • Deferred policy acquisition expenses (DPAE), including DPAE on commissions, premium taxes and others, and excluding DPAE on commissions for A&S business, • Current tax assets (income tax receivables), • Any deductions from capital, including goodwill, intangible assets and interests in non-qualifying subsidiaries, associates, and joint ventures with more than 10% ownership interest.

[38] Applies to all vested cash assets of branches.
[39] Includes securities, loans and accounts receivable.
[40] Sovereign obligations rated lower than AA- may not receive a factor of 0%, and are instead subject to the factor requirements in section *6.1.2*.

0.25%	• Demand deposits, certificates of deposit, drafts, checks, acceptances and similar obligations that have an original maturity of less than three months, and that are drawn on regulated deposit-taking institutions subject to the solvency requirements of the Basel Framework. (Note: where the maturity of the asset is longer than three months, the risk factor related to the credit rating of the regulated deposit-taking institution would apply instead.)
0.70%	• Insurance receivables from registered reinsurers, excluding intra-group pooling arrangements approved by OSFI, • Receivables from the Facility Association and the Plan de répartition des risques.
2.50%	• Investment income due and accrued, • Unearned premiums recoverable from registered reinsurers, excluding intra-group pooling arrangements approved by OSFI, • Unpaid claims and adjustment expenses recoverable from registered reinsurers, excluding intra-group pooling arrangements approved by OSFI.
4%	• First mortgages on one- to four-unit residential dwellings.
5%	• Receivables, outstanding less than 60 days, from agents, brokers, non-qualifying subsidiaries, associates, joint ventures, and policyholders, including instalment premiums and other receivables[41].
10%	• Receivables, outstanding 60 days or more, from agents, brokers, non-qualifying subsidiaries, associates, joint ventures and policyholders, including instalment premiums and other receivables[42], • Commercial mortgages and other residential mortgages that do not qualify as first mortgages on one- to four-unit residential dwellings, • The amount of available refunds of defined benefit pension fund surplus assets included in capital available, • Deferred tax assets arising from temporary differences that the institution could recover from income taxes paid in the three immediate preceding years. DTAs from temporary differences that are in excess of the amount of taxes recoverable in the three immediate preceding years should be deducted from capital available. • Other investments not specified in this section or section 5.5 as part of other market risk exposures, excluding derivative-related amounts. Capital requirements for derivative-related amounts included in other investments are set out in section 6.2, • Other assets not specified in this section or section 5.5 as part of other market risk exposures, excluding other investments.
15%	• Mortgages secured by undeveloped land (i.e. construction financing), other than land used for agricultural purposes or for the production of minerals. A property recently constructed or renovated will be considered as "under construction" until it is completed and 80% leased.

[41] Includes receivables for assumed business from unregistered insurers.
[42] Includes receivables for assumed business from unregistered insurers.

20%	• Other recoverables (mainly salvage and subrogation) on unpaid claims, • Self-insured retention recoverables not deducted from capital (reference section 4.4), • Assets held for sale (other than financial)[43].
45%	• Loans or other forms of lending (bonds, debentures, mortgages, etc.) to non-qualifying (non-consolidated) subsidiaries, associates and joint ventures with more than a 10% ownership interest, that are not reported as equity on their financial statements. • DPAE on commissions related to A&S business (reference section 4.6)

6.2. Capital Requirements for Off-Balance Sheet Exposures

The capital required for off-balance sheet exposures such as structured settlements, letters of credit or non-owned deposits, derivatives and other exposures is calculated in a manner similar to on-balance sheet assets in that the credit risk exposure is multiplied by a counterparty risk factor to arrive at the capital required. However, unlike most assets, the face amount of an off-balance sheet exposure does not necessarily reflect the true credit risk exposure. To approximate this exposure, a credit equivalent amount is calculated for each exposure. This amount, net of any collateral or guarantees, is then multiplied by a credit conversion factor. For letters of credit and non-owned deposits, the credit equivalent amount is the face value. The determination of the counterparty credit risk categories and the approach for determining the eligibility of collateral and guarantees is the same as it is for other assets. For letters of credit and non-owned deposits, the counterparty credit risk is found under section 4.3.

P&C insurers should also refer to OSFI's Guideline B-5: *Asset Securitization*, which outlines the regulatory framework for asset securitization transactions, including transactions that give rise to off-balance sheet exposures.

The risk to a P&C insurer associated with structured settlements, letters of credit, non-owned deposits, derivatives and other exposures and the amount of capital required to be held against this risk is:

i.) The credit equivalent amount of the instrument at the reporting date;

ii.) Less: the value of eligible collateral securities or guarantees (reference section 6.3);

iii.) Multiplied by: a factor reflecting the nature and maturity of the instrument (credit conversion factor); and

[43] 1) Alternatively, assets classified as held for sale may be re-consolidated (look-through approach) at the option of the insurer. If this method is selected, any write-down made as a result of re-measuring the assets classified as held for sale at the lower of carrying amount and fair value less costs to sell should be reflected in the MCT after re-consolidation. Any asset within a consolidated group that is deducted from capital available for MCT purposes should continue to be deducted from capital when it becomes an asset held for sale.
2) If the insurer has elected to apply a 20% risk factor to assets held for sale instead of using the look-through approach, associated liabilities held for sale should be subject to the usual MCT treatment of liabilities as per chapter 4.

iv.) Multiplied by: a factor reflecting the risk of default of the counterparty to a transaction (counterparty credit risk).

6.2.1. Credit equivalent amount

The credit equivalent amount related to off-balance sheet exposures varies according to the type of instrument.

6.2.1.1. Structured settlements

The credit equivalent amount for a "Type 1" structured settlement is the current replacement cost of the settlement, which is gross of the coverage provided by Assuris.

"Type 1" structured settlements are not recorded as liabilities on the balance sheet, and have the following characteristics:

i.) An annuity is purchased by a P&C insurer who is named the owner. There is an irrevocable direction from the P&C insurer to the annuity underwriter to make all payments directly to the claimant.

ii.) Since the annuity is non-commutable, non-assignable and non-transferable, the P&C insurer is not entitled to any annuity payments and there are no rights under the contractual arrangement that would provide any current or future benefit to the P&C insurer.

iii.) The P&C insurer is released by the claimant indicating settlement of the claim amount.

iv.) The P&C insurer remains liable to make payments to the claimant in the event and to the extent the annuity underwriter fails to make payments under the terms and conditions of the annuity and the irrevocable direction given.

Under this type of structured settlement arrangement, the P&C insurer is not required to recognize a liability to the claimant, nor is it required to recognize the annuity as a financial asset. However, the P&C insurer is exposed to some credit risk by guaranteeing the obligation of the annuity underwriter to the claimant and, consequently, must set aside additional capital.

P&C insurers should refer to Guideline D-5 *Accounting for Structured Settlements*.

6.2.1.2. Derivatives

The credit equivalent amount for derivatives is the positive replacement cost (obtained by "marking to market") plus an amount for potential future credit exposure (an "add-on" factor).

Derivatives include forwards, futures, swaps, purchased options, and other similar contracts. P&C insurers are not exposed to credit risk for the full face value of these contracts (notional principal amount); only to the potential cost of replacing the cash flow (on contracts showing a positive value) if the counterparty defaults. The credit equivalent amounts are assigned the risk factor appropriate to the counterparty in order to calculate the capital requirement.

The credit equivalent amount depends on the maturity of the contract and the volatility of the underlying instrument. It is calculated by adding:

i.) the total replacement cost (obtained by "marking to market") of all contracts with positive value; and

ii.) an amount for potential future credit exposure (or "add-on"). This is calculated by multiplying the notional principal amount by the following factors:

Derivative "Add-On" Factors

Residual Maturity (01)	Interest Rate (02)	Exchange Rate and Gold (03)	Equity (04)	Precious Metals except Gold (05)	Other Instruments (06)
One year or less	0.0%	1.0%	6.0%	7.0%	10.0%
One year to five years	0.5%	5.0%	8.0%	7.0%	12.0%
Over five years	1.5%	7.5%	10.0%	8.0%	15.0%

Notes:

1. Instruments traded on exchanges do not require capital for counterparty credit risk where they are subject to daily margining requirements.
2. For contracts with multiple exchanges of principal, the factors are to be multiplied by the number of remaining payments in the contract.
3. For contracts that are structured to settle outstanding exposures following specified payment dates, and where the terms are reset so that the market value of the contract is zero on these specified dates, the residual maturity is considered to be the time until the next reset date. In the case of interest rate contracts with remaining maturities of more than one year and that also meet the above criteria, the add-on factor is subject to a floor of 0.5%.
4. Contracts not covered by columns (02) to (05) in the above table are to be treated as "other instruments" for the purpose of determining the add-on factor.
5. No potential credit exposure would be calculated for single currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.
6. The add-ons are based on effective rather than stated notional amounts. In the event that the stated notional amount is leveraged or enhanced by the structure of the transaction, companies must use the actual or effective notional amount when determining potential future exposure. For example, a stated notional amount of $1 million with payments calculated at two times LIBOR would have an effective notional amount of $2 million.
7. Potential credit exposure is to be calculated for all over-the-counter (OTC) contracts (with the exception of single currency floating/floating interest rate swaps), regardless of whether the replacement cost is positive or negative.

No add-on for potential future exposure is required for credit derivatives. The credit equivalent amount for a credit derivative is equal to the greater of its replacement cost or zero.

6.2.1.3. Other exposures

Commitments

A commitment involves an obligation (with or without a material adverse change or similar clause) of the P&C insurer to fund its customer in the normal course of business should the customer seek to draw down the commitment. This includes:

i.) extending credit in the form of loans or participations in loans, lease financing receivables, mortgages or loan substitutes; or

ii.) purchasing loans, securities, or other assets.

Normally, commitments involve a written contract or agreement and a commitment fee or some other form of consideration.

The maturity of a commitment should be measured from the date when the commitment was accepted by the customer, regardless of whether the commitment is revocable or irrevocable, conditional or unconditional, until the earliest date on which:

i.) the commitment is scheduled to expire, or

ii.) the P&C insurer can, at its option, unconditionally cancel the commitment.

Repurchase and reverse repurchase agreements

A securities repurchase (repo) is an agreement whereby a transferor agrees to sell securities at a specified price and repurchase the securities on a specified date and at a specified price. Since the transaction is regarded as a financing transaction for accounting purposes, the securities remain on the balance sheet. Given that these securities are temporarily assigned to another party, the factor accorded to the asset should be the higher of the factor of the security and the factor of the counterparty to the transaction (net of any eligible collateral).

A reverse repo agreement is the opposite of a repo agreement, and involves the purchase and subsequent sale of a security. Reverse repos are treated as collateralized loans, reflecting the economic reality of the transaction. The risk is therefore to be measured as an exposure to the counterparty. Where the asset temporarily acquired is a security that attracts a preferential factor, this would be recognized as collateral and the factor would be reduced accordingly.

Guarantees provided in securities lending

In securities lending, P&C insurers can act as principal to the transaction by lending their own securities or as agent by lending securities on behalf of clients. When the P&C insurer lends its own securities, the risk factor is the higher of:

- the risk factor related to the instruments lent, or

- the risk factor for an exposure to the borrower of the securities. The exposure to the borrower may be reduced if the P&C insurer holds eligible collateral (reference section 6.3). Where the P&C insurer lends securities through an agent and receives an explicit guarantee of the return of the securities, the P&C insurer may treat the agent as the borrower subject to the conditions in section 6.3.2.

When the P&C insurer, acting as an agent, lends securities on behalf of a client and guarantees that the securities lent will be returned, or the P&C insurer will reimburse the client for the current market value, the P&C insurer should calculate the capital requirement as if it were the principal to the transaction. The capital requirements are those for an exposure to the borrower of the securities, where the exposure amount may be reduced if the P&C insurer holds eligible collateral (reference section 6.3).

6.2.2. Credit conversion factors

Separate credit conversion factors exist for structured settlements, letters of credit, non-owned deposits, derivatives and other exposures.

For other exposures, the weighted average of the credit conversion factors, described below, for all of these instruments held by the P&C insurer, should be used.

Factor	Instrument
100%	• Direct credit substitutes (general guarantees of indebtedness and guarantee-type instruments, including standby letters of credit and non-owned deposits serving as financial guarantees for, or supporting, loans and securities). • Derivatives such as forwards, futures, swaps, purchased options (including options purchased over the counter) and other similar derivative contracts, including: i.) Interest rate contracts (single currency interest rate swaps, basis swaps, forward rate agreements and products with similar characteristics, interest rate futures, interest rate options purchased, and similar derivative contracts based on specific parameters as well as on indices, etc.). ii.) Equity contracts (forwards, swaps, purchased options, and similar derivative contracts based on specific parameters as well as on indices, etc.). iii.) Exchange rate contracts (gold contracts, cross-currency swaps, cross-currency interest rate swaps, outright forward foreign exchange contracts, currency futures, currency options purchased, and similar derivative contracts based on specific parameters as well as on indices, etc.). iv.) Precious metals (except gold) and other commodity contracts (forwards, swaps, purchased options, and similar derivative contracts based on specific parameters as well as on indices, etc.). v.) Other derivative contracts based on specific parameters as well as on indices (such as catastrophe insurance options and futures). • Forward agreements (contractual obligations) to purchase assets.

	• Sale and repurchase agreements. • All other exposures not reported elsewhere (provide details).
50%	• Structured settlements that are not recorded as liabilities on the balance sheet (refer to Type 1 characteristics and to Guideline D-5 *Accounting for Structured Settlements*). • Transaction-related contingencies (for example, warranties and standby letters of credit related to a particular transaction). • Commitments with an original maturity exceeding one year.
20%	• Commitments with an original maturity of one year or less.
0%	• Commitments that are unconditionally cancellable at any time without prior notice.

6.2.3. Risk factors

Risk factors for off-balance sheet exposures are assigned a risk factor consistent with section 6.1. All criteria in section 6.1 around the use of ratings are applicable to off-balance sheet exposures.

Risk factors for structured settlements, which are considered long-term exposures, are based on the credit rating of the counterparty from which the annuity is purchased. The risk factors are as follows:

Structured Settlements	
Rating	**Risk factor**
Rated A- and higher	2%
Rated BBB+ to B-	8%
Unrated	10%
Below B-	18%

If the structured settlement is not rated by one of the four rating agencies listed in section 6.1.1, a P&C insurer may use a credit rating from another reputable rating agency. The use of an alternative rating agency must comply with all the criteria around the use of ratings specified in section 6.1.1, including a consistent use of the same rating agency in order to assign a risk factor based on the credit rating of the annuity underwriter.

6.3. Capital Treatment of Collateral and Guarantees

6.3.1. Collateral

A collateralized transaction is one in which:

- a company has a credit exposure or potential credit exposure; and
- the credit exposure or the potential credit exposure is hedged in whole or in part by collateral posted by a counterparty or by a third party on behalf of the counterparty.

Recognition of collateral in reducing the capital requirement is limited to cash or securities rated A- or higher. Any collateral must be held throughout the period for which the exposure exists. Only that portion of an exposure that is covered by eligible collateral will be assigned the risk factor given to the collateral, while the uncovered portion retains the risk factor of the underlying counterparty. Only collateral securities with a lower risk factor than the underlying exposure will lead to reduced capital requirements. All criteria in section 6.1 around the use of ratings are applicable to collateral. Where a rating is not available for the collateral asset, exposure, or counterparty where applicable, no reduction in capital required is permitted.

The effects of collateral may not be double counted. Therefore, insurers may not recognize collateral on claims for which an issue-specific rating is used that already reflects that collateral.

Collateral securities used to reduce capital requirements must materially reduce the risk arising from the credit quality of the underlying exposure. In particular, collateral used may not be related party obligations of the issuer of the underlying exposure (i.e. obligations of the underlying counterparty itself, its parent, or one of its subsidiaries or associates).

6.3.2. Guarantees

Investments (principal and interest) or exposures that have been explicitly, directly, irrevocably and unconditionally guaranteed by a guarantor whose long-term issuer credit rating is A- and higher, may attract the risk factor allocated to a direct claim on the guarantor where the desired effect is to reduce the risk exposure. Thus only guarantees[44] issued by entities with a lower risk factor than the underlying counterparty will lead to reduced capital requirements. To be eligible, guarantees must be legally enforceable.

Where the recovery of losses on a loan, financial lease agreement, security or exposure is partially guaranteed, only the part that is guaranteed is to be weighted according to the risk factor of the guarantor (see examples below). The uncovered portion retains the risk factor of the underlying counterparty.

[44] Letters of credit for which a company is the beneficiary are included within the definition of guarantees, and receive the same capital treatment.

All criteria in section 6.1 around the use of ratings remain applicable to guarantees. Where a rating is not available for the investment, exposure, or guarantor where applicable, no reduction in capital required is permitted.

A P&C insurer may not recognize a guarantee provided by a related party (parent, subsidiary or associate) of the insurer. This treatment follows the principle that guarantees within a corporate group are not a substitute for capital.

The effects of credit protection may not be double counted. Therefore, no capital recognition is given to credit protection on claims for which an issue-specific rating is used that already reflects that protection.

To be eligible, a guarantee must cover the full term of the exposure, i.e. no recognition will be given to a guarantee if there is a maturity mismatch[45].

6.3.2.1. Additional requirements for guarantees

The following conditions must be satisfied in order for a guarantee to be recognized:

1. On the qualifying default/non-payment of the counterparty, the insurer may in a timely manner pursue the guarantor for any monies outstanding under the documentation governing the transaction. The guarantor may make one lump sum payment of all monies under such documentation to the insurer, or the guarantor may assume the future payment obligations of the counterparty covered by the guarantee. The insurer must have the right to receive any such payments from the guarantor without first having to take legal action in order to pursue the counterparty for payment.
2. The guarantee is an explicitly documented obligation assumed by the guarantor.
3. Except as noted in the following sentence, the guarantee covers all types of payments the underlying obligor is expected to make under the documentation governing the transaction, for example notional amount, margin payments etc. Where a guarantee covers payment of principal only, interest and other uncovered payments should be treated as an unsecured amount in accordance with section 6.1.2.

[45] A maturity mismatch occurs when the residual maturity of the credit protection is less than that of the underlying exposure.

Example 6-1: Credit risk exposure.

To record a $100,000 bond rated AAA due in 10 years that has a government guarantee of 90%, the P&C insurer would report a balance sheet value of $90,000 ($100,000 x 90%) in the 0% risk weighted category and a balance value of $10,000 ($100,000 - $90,000) in the AAA category under bonds expiring or redeemable in more than five years. The capital required in the 0% risk weighted category is $0 ($90,000 x 0.0%). The capital required in the AAA category is $125 ($10,000 x 1.25%) for a total capital requirement of $125. An example of the calculation, assuming no other assets, is provided in the chart below.

	Factor (%)	**Balance Sheet Value**	**Capital Required**
Investments:			
Term Deposits, Bonds And Debentures:			
- Expiring or redeemable in more than five years:			
0% risk factor	0.0%	$90,000	$0
Rating: AAA	1.25%	$10,000	$125
Total		**$100,000**	**$125**

Example 6-2: Type 1 structured settlement.

To record a $300,000 Type 1 structured settlement rated BBB+ to B-, backed by collateral or a guarantee of $200,000 from a counterparty rated A- or higher, the P&C insurer would report a credit equivalent amount of $300,000 and collateral and guarantees of negative $200,000 in the BBB+ to B- category, and collateral and guarantees of $200,000 in the A- and higher category.

The capital required in the BBB+ to B- category is $4,000 (($300,000 - $200,000) x 50% x 8%). The capital required in the A- and higher category is $500 ($200,000 x 50% x 0.5%) for a total capital requirement of $4,500. An example of the calculation, assuming no other exposures, is provided in the table below.

	Credit Equivalent Amount (01)	**Collateral and Guarantees** (02)	**Credit Conversion Factor** (03)	**Risk Factor** (04)	**Capital Required** (05)
Structured Settlements:					
0% risk factor					
Rated A- and higher		$200,000	50%	0.5%	$500
Rated BBB+ to B-	$300,000	($200,000)	50%	8.0%	$4,000
Total					**$4,500**

Chapter 7. Operational Risk

Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. The definition includes legal risk[46] but excludes strategic and reputation risk.

Exposure to operational risk results from either day-to-day operations or a specific, unanticipated event.

7.1. Operational Risk Formula

The two risk drivers used to determine the operational risk margin are capital required and premiums, subject to a cap.

$$\textit{Operational risk margin} = MIN\ \{30\%\ CR_0,\ (8.50\%\ CR_0 + 2.50\%\ P_w + 1.75\%\ P_a + 2.50\%\ P_c + 2.50\%\ P_\Delta) + \mathrm{MAX}(0.75\%\ P_{aig},\ 0.75\%\ P_{cig})\}$$

where:

- $\boldsymbol{CR_0}$ is total capital required for the reporting period, before the operational risk margin and diversification credit
- $\boldsymbol{P_w}$ is direct premiums written in the past 12 months
- $\boldsymbol{P_a}$ is assumed premiums written in the past 12 months arising from third party reinsurance
- $\boldsymbol{P_{aig}}$ is assumed premiums written in the past 12 months arising from intra-group pooling arrangements
- $\boldsymbol{P_c}$ is ceded premiums written in the past 12 months arising from third party reinsurance
- $\boldsymbol{P_{cig}}$ is ceded premiums written in the past 12 months arising from intra-group pooling arrangements
- $\boldsymbol{P_\Delta}$ is growth in gross premiums written in the past 12 months above a 20% threshold

7.2. Components of Operational Risk Margin

7.2.1. Capital required

A portion of the operational risk margin is based on total capital required, reflecting the overall riskiness of a P&C insurer. An 8.50% risk factor applies to total capital required, before the operational risk margin and diversification credit.

[46] Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

7.2.2. Premium volume

The following risk factors apply to insurance premiums:

- *2.50% for direct written premiums*
- *1.75% for assumed premiums written arising from third party reinsurance*
- *0.75% for assumed premiums written arising from intra-group pooling arrangements*
- *2.50% for ceded premiums written arising from third party reinsurance*
- *0.75% for ceded premiums written arising from intra-group pooling arrangements*

The 2.50% risk factor for direct written premiums and the 1.75% risk factor for assumed premiums from third party reinsurance capture an insurer's operational risk exposure on new business and renewals.

The 2.50% risk factor for ceded premiums from third party reinsurance captures the operational risk remaining with the ceding insurer. While the insurer cedes a portion of its insurance risk exposure through reinsurance, the operational risk remains with the ceding insurer. Because the capital requirements for insurance liabilities (reference section 4.2) are calculated on the net amount of risk (net of reinsurance), the portion of operational risk requirement calculated as 8.50% of capital required does not account for the operational risk on the entire business of the insurer.

Intra-group pooling arrangements

The 0.75% risk factor for assumed and ceded premiums arising from intra-group pooling arrangements captures the additional operational risks associated with pooling premiums within a group compared to a company that does not enter into transactions moving the premiums from a company to another within a group.

Only premiums assumed and ceded from intra-group pooling arrangements between associated Canadian federally or provincially regulated companies are included in $\boldsymbol{P_{aig}}$ and $\boldsymbol{P_{cig}}$, and a prior supervisory approval from OSFI is required. If prior approval is not granted, the premiums assumed and ceded in the intra-group pooling arrangement will be considered as premiums arising from a third party reinsurance arrangement and, therefore, will be included in $\boldsymbol{P_a}$ and $\boldsymbol{P_c}$ for capital requirement calculation purposes.

In cases where P&C subsidiaries are consolidated in the financial statements of the P&C parent company, $\boldsymbol{P_w}$, $\boldsymbol{P_a}$, and $\boldsymbol{P_c}$, at the parent level, must be determined on a consolidated basis, while $\boldsymbol{P_{aig}}$ and $\boldsymbol{P_{cig}}$ must be equal to the non-consolidated intra-group pooled premiums assumed and ceded by the parent company, respectively.

- For example, assume that two subsidiaries, company Y and company Z cede 100% of their direct written business to Company X (the parent). Company X then cedes 20% of the total of the direct business of each company (including the parent's business) to each subsidiary. Assuming that each of the three companies write $100 of direct premiums, the following amounts would apply to calculate the operational risk margin for company X:

$\boldsymbol{P_w}$: 3 x $100 (direct premiums written by each company) = $300

$\boldsymbol{P_a}$ and $\boldsymbol{P_c}$: $0 (assuming all three companies are not part of third party reinsurance arrangements)

$\boldsymbol{P_{aig}}$: 2 x $100 (premiums assumed by company X as part of the intra-group arrangement) = $200

$\boldsymbol{P_{cig}}$: 2 x $60 (premiums ceded by company X as part of the intra-group arrangement) = $120

The capital requirement for operational risk associated with the premiums would be calculated as follows:

$$(2.50\%\ P_w + 1.75\%\ P_a + 2.50\%\ P_c + 2.50\%\ P_\Delta) + MAX\,(0.75\%\ P_{aig,}, 0.75\%\ P_{cig}) =$$

$$(\$7.50 + 0 + 0 + 0) + \$1.50 = \$9.00$$

7.2.3. Year-over-year premium growth beyond a threshold

Rapid growth, which is linked to the acquisition of another entity, the acquisition of a block of business through assumption reinsurance, new lines of business or changes to existing products or underwriting criteria, can create additional pressures on people and systems. Companies with premium growth beyond a 20% threshold are subject to additional capital requirements for operational risk.

The premium growth requirement is calculated using gross premiums, i.e. direct premiums written plus assumed premiums written. For the purposes of this section, assumed premiums written arising from intra-group pooling arrangements (i.e. $\boldsymbol{P_{aig}}$) are excluded from gross premiums. A 2.50% risk factor applies to the total amount of gross premiums written in the past 12 months above the 20% growth threshold compared to the gross premiums written for the same period in the previous year.

- For example, assume that as a result of rapid growth, gross premiums increase by 50% from $100 to $150. The amount above the 20% increase ($30) is subject to an additional risk factor of 2.50%.

In the case of an acquisition, the total gross written premiums for a prior reporting period (before the acquisition) is the sum of the gross premiums written by the two separate entities, i.e. the sum of the acquiring and the acquired companies' gross written premiums.

- For example, assume that in Year T a company A with gross written premiums of $100 for the 12 months period ending December 31, Year T-1 acquired a company B with gross written premiums of $50 for the same period. The merged company reported a total of $225 in gross written premiums for the 12 months period ending December 31, Year T. The capital requirement for operational risk associated with rapid growth in premiums would be calculated as follows:

$$2.50\% \text{ x } [225 - ((100 + 50) \text{ x } 1.20)] \text{ or } 2.50\% \text{ x } \$45 = \$1.13$$

7.2.4. Cap on operational risk margin

A 30% cap serves to dampen the operational risk margin for companies that have high-volume/low-complexity business. The 30% cap is calculated in relation to total capital required, before the operational risk margin and diversification credit.

Chapter 8. Diversification Credit

Because losses arising across some risk categories are not perfectly correlated with each other, a company is not likely to incur the maximum possible loss at a given level of confidence from each type of risk simultaneously. Consequently, an explicit credit for diversification is permitted between the sum of credit and market risk requirements, and the insurance risk requirement so that the total capital required for these risks is lower than the sum of the individual requirements for these risks.

8.1. Risk Aggregation and Diversification Credit

The diversification credit is calculated using the following formula:

$$\textit{Diversification credit} = A + I - \sqrt{A^2 + I^2 + 2 \times R \times A \times I},$$

where:

A is the asset risk margin, which is the sum of capital required for:

- credit risk, including requirements for balance sheet assets and off-balance sheet exposures, and collateral for unregistered reinsurance and self-insured retentions;
- market risk, including interest rate risk, foreign exchange risk, equity risk, real estate risk and other market risk exposures.

I is the insurance risk margin, which is the sum of capital required for:

- unpaid claims and premium liabilities;
- margin required for unregistered reinsurance exposures; and
- catastrophe risk.

R is the correlation factor between *A* and *I,* equal to 50%.

-END-

Guideline

Subject: **Regulatory Capital and Internal Capital Targets**

Category: **Capital Management**

No: **A-4** **Date:** **December 2017**
Effective Date: **January 1, 2018**

This guideline sets out OSFI's expectations with regard to the capital and solvency assessment of federally regulated insurers (FRI or insurer)[1], within the context of OSFI's *Supervisory Framework.*[2]

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[1] FRI or insurer refers to federally regulated insurers including Canadian branches of foreign life and property and casualty companies, fraternal benefit societies, regulated insurance holding companies and non-operating insurance companies.

[2] Consult OSFI's website (www.osfi-bsif.gc.ca) for more information regarding OSFI's *Supervisory Framework*, including related *Assessment Criteria* documents.

I. The Role of Capital in OSFI's Risk Assessment Process

OSFI's risk assessment process begins with an evaluation of the inherent risk within each significant activity of a FRI and the quality of risk management applied to mitigate these risks. After considering this information, OSFI determines the level of net risk and direction (i.e., whether it is decreasing, stable, or increasing) of the rating for each significant activity.

The net risks of the significant activities are combined, by considering their relative importance, to arrive at the Overall Net Risk (ONR) of the insurer. The ONR is a consolidated rating or assessment of the potential adverse impact that the significant activities collectively could have on the insurer's earnings performance and adequacy of capital. OSFI then develops a Composite Risk Rating (and its direction) for the insurer, after considering the assessments of its earnings and capital in relation to the ONR, and the assessment of liquidity.

While regulatory capital is an important factor in OSFI's capital assessment, other factors are also considered. OSFI's *Capital Assessment Criteria* include, for example:

- adequacy of capital to support the insurer's risk profile and business plan, including risks that are not fully captured in the regulatory capital guidelines;
- ability to access capital at reasonable rates to meet projected needs;
- quality of capital;
- quality or strength of the insurer's capital management policy, including its capital management processes; and
- Senior Management's and the Board of Directors'[3] (Board) roles, responsibilities and effectiveness with respect to the insurer's capital management processes.

Capital considerations should include elements of capital that contribute to financial strength through periods when an insurer is under stress (e.g., common shares) as well as elements that contribute to policyholder and creditor protection during wind-up (e.g., subordinated debt). Some elements may contribute to both, while others are less likely to do so.

OSFI expects the level and quality of an insurer's capital and its capital management to be commensurate with its circumstances, including its risk profile, appetite for risk and operating environment. Past and emerging trends, including the outlook for capital, earnings and liquidity, as well as the insurer's preparedness to deal with potential capital deficiencies, are relevant in assessing the adequacy of an insurer's capital position. In this regard, the number, severity and overall quality of the stress scenarios used by an insurer to assess its capital adequacy in relation to all relevant regulatory and internal capital expectations are important considerations for OSFI when it assesses the strength of an insurer's capital.

[3] For foreign company branch operations in Canada, OSFI looks to the Chief Agent to oversee the management of the branch. Throughout this document, a reference to a Board of Directors' role and function is meant to refer to a Chief Agent's role and function with respect to foreign company branch operations in Canada.

Insurers should have risk and capital management processes that take into account their risk profile and business strategy, potential stress situations and future changes to enable them to effectively monitor and manage their ability to meet, on a continuous basis, regulatory as well as internal capital expectations.

II. Regulatory Capital

The *Insurance Companies Act* requires federally regulated insurance companies and fraternal benefit societies to maintain adequate capital and companies operating in Canada on a branch basis to maintain an adequate margin of assets in Canada over liabilities in Canada. Guidelines A: *Mortgage Insurer Capital Adequacy Test* (MICAT), *Minimum Capital Test (MCT)* and *Life Insurance Capital Adequacy Test (LICAT)* (together referred to as Capital Guidelines) provide the framework within which the Superintendent assesses whether a mortgage insurer, a P&C insurer that is not a mortgage insurer, or a life insurer, respectively, maintains adequate capital or margin.[4]

The Capital Guidelines establish standards for measuring specific insurer risks and for aggregating these results to calculate the amount of an insurer's regulatory capital needed to support these risks (capital requirement). For P&C insurers, the MICAT and the MCT guidelines define the capital requirement amount as the minimum capital required, while for life insurers the capital requirement amount is referred to as the Base Solvency Buffer in the LICAT. In relation to these capital requirements, OSFI has determined industry minimum and target capital levels.[5] These serve as a gauge of a financial institution's regulatory capital adequacy and can trigger intervention actions.[6]

The Capital Guidelines also define and establish criteria and limits for determining the amount of an insurer's qualifying regulatory capital (Capital Resources). For P&C insurers, this is referred to as capital available in the MICAT and MCT guidelines, while for life insurers, it is Available Capital plus Surplus Allowance (SA) and Eligible Deposits (ED) in the LICAT.

Components of Regulatory Capital[7]				
	MICAT Total	**MCT / BAAT Total**	**LICAT / LIMAT Total**	**LICAT / LIMAT Core**
Capital Resources	Capital available	Capital available	Available Capital + SA + ED	Tier 1 Capital[8] + 70% of SA + 70% of ED
Capital requirement	Minimum capital required	Minimum capital required	Base Solvency Buffer	Base Solvency Buffer

[4] In this guideline, the use of concepts applicable to companies and societies also includes the equivalent concepts applicable to foreign companies' and societies' branch operations in Canada. For example, the concept "capital" includes the equivalent concepts of "margin" and "Net Assets Available" as it applies to branches; "Available Capital" includes "Available Margin" and "Tier 1" includes "Available Margin excluding Other Admitted Assets".

[5] For life insurers, regulatory minimum and target capital levels are calculated on the basis of both total and core, while P&C insurers base theirs solely on total.

[6] The *Guide to Intervention for Federally Regulated Life Insurance Companies* and *Supervisory Guide Applicable to Federally Regulated Insurance Companies* can be found on OSFI's website.

[7] The terms capital available, Available Capital, Surplus Allowance, Eligible Deposits, minimum capital required and Base Solvency Buffer are defined in the Capital Guidelines.

[8] For life insurers, the LICAT includes additional criteria for determining the amount that qualifies as Tier 1 Capital (Tier 1), which is comprised of only the highest quality capital elements.

Minimum Capital

The Capital Guidelines address specific insurer risks and determine minimum capital levels (Minimums) to support these risks.

> ***Minimums:*** *The minimum levels of capital necessary for an insurer to cover the risks specified in the Capital Guidelines.*

If an insurer's Capital Resources approached, or were to fall below, the Minimums, OSFI would be very concerned about the ongoing viability of the insurer and/or the level of risk to policyholders and creditors.

Supervisory Target Capital

OSFI's mandate includes an early intervention approach. This is partly addressed by establishing supervisory target capital levels (Supervisory Targets) above the Minimums that provide an early signal so that intervention will be timely and for there to be a reasonable expectation that actions can successfully address difficulties.[9]

> ***Supervisory Targets:*** *The target levels of capital necessary for an insurer to cover the risks specified in the Capital Guidelines as well as to provide a margin for other risks.*

From a supervisory perspective, an insurer's failure to maintain Capital Resources above the Supervisory Targets is indicative of material safety and soundness concerns and a vulnerability to adverse business and economic conditions that require immediate attention. An insurer whose Capital Resources approach or fall below the Supervisory Targets will attract increased supervisory attention, which would generally include an early warning intervention status (i.e. stage 1). The intensity and nature of supervisory intervention would depend on the circumstances of the particular insurer.

Regulatory Capital Levels

OSFI has set the following capital levels expressed as a percentage of the amount of an insurer's capital requirements:

Regulatory Capital Levels				
	MICAT	**MCT / BAAT**	**LICAT / LIMAT**	
	Total	**Total**	**Total**	**Core**
Minimums	100%	100%	90%	55%[10]
Supervisory Targets	150%	150%	100%	70%

[9] Supervisory Targets are not applicable to regulated insurance holding companies and non-operating insurance companies.

[10] Regulated life insurance holding companies and non-operating life insurance companies are required to maintain a minimum Core level of 50%.

For monitoring purposes and in OSFI supervisory and other documentation, the amount of Capital Resources is generally expressed as a percentage of the amount of an insurer's capital requirements and compared to the above capital levels.

III. Internal Capital Targets

All risks specific to an individual insurer cannot be explicitly addressed by industry-wide Capital Guidelines alone. The Minimums and Supervisory Targets are based upon simplifying assumptions applicable on an industry-wide basis, and are not tailored to individual insurers' risk profiles. Accordingly, an insurer should not unduly rely on these regulatory capital measures but should conduct its Own Risk and Solvency Assessment (ORSA) and, based on this process, determine its own capital needs and establish Internal Capital Targets (Internal Targets).[11]

> ***Internal Targets:*** *The target levels of capital, determined as part of an insurer's ORSA, needed to cover all the risks of the insurer, including the risks specified in the Capital Guidelines.*

Insurers are expected to determine an Internal Target of total capital. Life insurers are expected to determine, in addition to the Internal Target of total capital, an Internal Target of core capital. OSFI should be notified when an insurer changes its Internal Targets.

Internal Targets should be set above Supervisory Targets. To determine whether Internal Targets are above Supervisory Targets, insurers should compare their total and core Internal Targets to the total and core Supervisory Targets respectively.[12]

Parent/head office guarantees, potential future injections of capital or other potential management actions that change the insurer's business or risk profile are not assumed in the determination of the Supervisory Targets[13] and should therefore not be assumed in the setting of Internal Targets.[14] These factors should only be considered when determining the level at which the insurer will operate.

Insurers are expected to operate at Capital Resources levels above the Internal Targets.[15] OSFI understands that an insurer's Capital Resources levels may fall below its Internal Targets on

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[11] Guideline E-19: *Own Risk and Solvency Assessment* outlines OSFI expectations and principles with respect to setting Internal Targets, based on an insurer's ORSA.

[12] To determine whether Internal Targets are above Supervisory Targets, Internal Targets should be expressed as a percentage of the amount of an insurer's capital requirements and compared to the Regulatory Capital Levels.

[13] Parent/head office guarantees, potential future injections and other potential management actions that change the insurer's business or risk profile are also not considered in the calculation of the Minimums.

[14] Consistent with Canadian P&C insurers that are not mortgage insurers, Canadian branches of foreign P&C insurers use a specified amount of the company's worldwide capital and surplus in the calculation of their capital requirements for earthquake risk, a component of the Supervisory Target. Both Canadian P&C insurers that are not mortgage insurers and Canadian branches of foreign P&C insurers may therefore include such amounts, to the extent permitted in the MCT, in the determination of their Internal Target.

[15] For monitoring purposes, an insurer's capital ratios, calculated per the Capital Guidelines, are used to determine whether an insurer is operating above its Internal Targets.

unusual and infrequent occasions. If this happens, or is anticipated to happen within two years[16], the insurer should inform OSFI promptly and provide plans on how it expects to manage the risks and/or restore its Capital Resources levels to its Internal Targets within a relatively short period of time.

IV. Capital Management Policy

Capital management is the on-going process of determining and maintaining the quantity and quality of capital appropriate to support an insurer's planned operations. Capital should be managed to maintain financial strength, absorb losses so as to withstand adverse economic conditions, allow for growth opportunities and meet other risk management and business objectives. It should also be managed in order to provide, in extreme cases such as imminent failure or insolvency, sufficient assets to transfer or run-off policyholder obligations and pay creditor claims.

The insurer's ORSA and its strategic and business plans should support Senior Management and the Board in establishing capital management policies and procedures that include, among other things[17]:

- Clearly defined roles and responsibilities with respect to the design and execution of relevant policies and procedures;
- A policy that states capital adequacy goals relative to risk, taking into account the insurer's strategic focus and business plan, and that sets its Internal Targets;
- A policy with respect to the Board's regular review[18] and discussion of the insurer's capital management policy and ORSA.

– END –

[16] As may be contained in financial forecasts or other reports (e.g., projections of very likely scenarios) prepared for Senior Management, the Board, investors or the public.

[17] For additional guidance on how an insurer's ORSA links risk management, capital management and other management processes, please refer to OSFI's Guideline E-19: *Own Risk and Solvency Assessment*.

[18] The review should be conducted at least annually or more frequently if conditions warrant.

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OFFICE OF THE SUPERINTENDENT OF FINANCIAL INSTITUTIONS

PROPERTY AND CASUALTY MEMORANDUM TO THE APPOINTED ACTUARY

2019

OSFI BSIF

Canada

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1. OVERVIEW

This Memorandum describes the requirements of the Office of the Superintendent of Financial Institutions (OSFI or Superintendent) with respect to the Appointed Actuary's Report (AAR) specified in subsection 667(2) of the *Insurance Companies Act (ICA)*. It sets out the minimum standards used in determining the acceptability of the AAR and provides guidance for the Appointed Actuary preparing reports in matters relating to presentation, level of detail and nature of the discussions to be included.

Many insurers are required to file an AAR, as part of the Annual Return forms, with more than one regulator, federal or provincial, in Canada. The insurer is responsible for ensuring that the AAR submitted as part of the Annual Return complies with the requirements of each regulator.

The term AAR refers to the detailed actuarial report submitted to a regulator. This includes the opinion of the Appointed Actuary concerning the fairness and adequacy of the policy liabilities included in the insurer's financial statements, a detailed commentary, data exhibits and calculations supporting that opinion.

The AAR comprehensively documents the work done by the Appointed Actuary to calculate policy liabilities. OSFI views the AAR as a key component of its review of the company's financial position and profile.

The AAR is not solely a report from the company's Appointed Actuary to OSFI's actuaries. It is also intended for company management and is read by regulators who may not be actuaries but who are knowledgeable about insurance. Therefore, the AAR should be presented in a manner generally understandable to both company management and the regulator.

2. REGULATORY REQUIREMENTS

2.1 Application of Professional Standards to the Appointed Actuary's Valuation

Subsections 365(2) and 629(2) of the ICA require that "The actuary's valuation shall be in accordance with generally accepted actuarial practice with such changes as may be determined by the Superintendent and any additional directions that may be made by the Superintendent."

OSFI's Guideline E-15 *Appointed Actuary: Legal Requirements, Qualifications and Peer Review* describes the role of the Appointed Actuary and sets out some of OSFI's expectations with respect to that role. The guideline also outlines the actuary's qualification required to carry out the Appointed Actuary's role.

The Canadian Institute of Actuaries (CIA) annually issues a letter (the Fall Letter) from the Committee on Property and Casualty Insurance Financial Reporting (PCFRC) and, from time to time, may issue other educational notes. While the Fall Letter and educational notes are not standards, the Appointed Actuary should disclose when either the educational notes and/or the PCFRC Fall Letter are/is not followed as well as the supporting justification.

For purposes of the Appointed Actuary's valuation of policy liabilities (and the associated opinion), OSFI currently accepts that work performed in accordance with "accepted actuarial

practice" in Canada (as defined by the CIA) is sufficient to satisfy the 'generally accepted actuarial practice' requirement referred to in the ICA sections identified above. "Accepted actuarial practice" is defined by the professional actuarial standards of practice promulgated by the Actuarial Standards Board (ASB), together with the additional requirements and directions of this Memorandum. Any deviations from CIA Standards of Practice or from the additional requirements of this Memorandum must be reported in the AAR and justified.

This Memorandum for 2019 year-end financial reporting does not contain any requirements that override or limit accepted actuarial practice.

In complying with accepted actuarial practice, the Appointed Actuary must meet a standard of care with respect to the data used in valuations. This standard of care, implicitly stated in the CIA Standards of Practice, requires the Appointed Actuary to establish suitable check procedures for the verification of data. While the CIA Standards of Practice (SOP Subsection 1520) offer the Appointed Actuary the option to consider the Auditor's work, the existence of the Joint Policy Statement does not override the ICA's requirement for filing reports with the Annual Return that meet the standard of care implicitly stated in the CIA Standards of Practice. The AAR must discuss the extent to which the Appointed Actuary considers the work of the Auditor. Where the Appointed Actuary uses the work of the Auditor, the details of the Auditor's work should not be addressed in the AAR. If there are instances where the Appointed Actuary does not use the work of the Auditor because of any special circumstances, this must be disclosed in the data section of the AAR. The Appointed Actuary should describe the data verification that was performed.

The CIA Standards of Practice (SOP Subsection 1510) describe the Appointed Actuary's use of another person's work. Such use of the work of others should be disclosed in the section of the AAR where it most logically applies (e.g., at the company level, a specific product level, etc.).

2.2 Filing Directions for the AAR, DCAT Report and Peer Review Report

The filing deadlines for the above reports are:

- AAR - no later than 60 days after the end of the fiscal year,
- DCAT Report - the earlier of 30 days after the presentation to the Board of Directors, Audit Committee or Chief Agent and one year after the fiscal year end,
- Peer Review Report (full 3-year review or the limited annual review) - 30 days after its transmission to the Board of Directors, Audit Committee or Chief Agent.

OSFI's Guideline E-15 *Appointed Actuary: Legal Requirements, Qualifications and Peer Review* provides more details on filing deadlines.

For the AAR, the DCAT Report and the Peer Review Report, the company must submit one electronic copy uploaded via the Regulatory Reporting System (RRS). A scanned copy of the signed opinion must be included in the electronic submission. **Failure to meet the deadlines of the filings will result in a penalty fee under OSFI's Late and Erroneous Filing Penalty Framework.**

For security reasons, companies should not file reports through e-mail. The file should be in PDF format and preferably created with a PDF software rather than through scanning, as the former is searchable while the latter is not. The information should be easily copied by OSFI staff from the AAR, the DCAT or the Peer Review Report. Therefore, the reports should not be security protected and exhibits should be in a format that can easily be transferred to a spreadsheet. Otherwise, the company should be prepared to promptly provide searchable data in an alternative media upon request.

With the exception of some institutions, OSFI does not require hard copies of the AAR. Companies required to provide hard copies will be contacted individually.

Companies should follow the file naming conventions outlined in the instructions for Unstructured Financial Returns. Both the full 3-year review and the limited annual review share the same naming conventions.

The filing instructions may be obtained on the OSFI website at www.osfi-bsif.gc.ca under *Regulatory Data and Returns / Filing Financial Returns / Canadian & Foreign Property and Casualty Insurance Companies*.

In order to file a Peer Review Report within RRS, companies are reminded that these filings must first be requested by contacting ReturnsAdmin@osfi-bsif.gc.ca or by calling 613-991-0609.

The ICA requires companies to file their AAR with their Annual Return. OSFI will not accept a certificate containing only the opinion of the Appointed Actuary in lieu of a full AAR.

Companies are reminded that the filing of AARs and opinions with the P&C Return requires that each copy of the P&C Return filed with OSFI should contain a properly signed copy of the AAR.

Note that Section 7.5 requires a separate cover letter for Disclosure of Compensation.

2.3 Differences (if any) Between the Appointed Actuary's Valuations and Corresponding Annual Return Liabilities

Companies are expected to book the Appointed Actuary's estimated policy liabilities in the Annual Return. In the circumstances where the booked gross, ceded or net policy liabilities differ from the estimated policy liabilities by more than the Appointed Actuary's selected standard of materiality, the AAR must describe the reasons for the differences.

For federally regulated companies, the provision for policy liabilities in the liabilities shown in the balance sheet of the Annual Return should be greater than or equal to the corresponding estimated policy liabilities on a discounted basis including PfAD calculated by the Appointed Actuary.

2.4 Persons Signing the Appointed Actuary's Report

The AAR must be signed by the Appointed Actuary, who must be a Fellow of the CIA.

3. OSFI'S REVIEW PROCESS

OSFI recognizes the confidential nature of the AAR. Reviews of the filed Annual Returns may disclose that an Appointed Actuary's valuation warrants further assessment and questioning. The Superintendent may reject assumptions and methods where it appears that the policy liabilities produced are inappropriate.

Since the review of an AAR may take place over an extended period after filing, OSFI may request the Appointed Actuary to provide supplemental detail to sufficiently assess the assumptions and methods. The Appointed Actuary is expected to respond promptly to all supplemental requests. Working papers required to support the computation of the policy liabilities reported in the Annual Return and the AAR should be available at all times and should be made available to OSFI upon request.

Where the appropriateness of particular assumptions or methods is not sufficiently demonstrated, the Superintendent will require the Appointed Actuary to choose other acceptable assumptions or methods, and to re-compute the policy liabilities. In such a situation, the Appointed Actuary must re-file the AAR. The Superintendent may also require the company to amend the Annual Return. Alternatively, the Superintendent may ask the company to reflect the changes in the Annual Return for the following year. The Superintendent may request a report from an Independent Actuary.

4. SPECIAL LINE OF BUSINESS CONSIDERATIONS

4.1 Marine Insurance

Marine insurance business, if transacted, must be included within the scope of the AAR. The AAR should clearly identify the Appointed Actuary's provisions for marine insurance.

4.2 Title Insurance

Premiums for title insurance are earned at issue. Unearned premium reserves are therefore not usually required. The accident date for all claims is the issue date of the policy as most problems with the title that could cause a claim would be in existence at the issue date of the policy.

4.3 Accident and Sickness Insurance

This Memorandum does not deal specifically with accident & sickness insurance valuation.

Companies and their actuaries preparing reports on accident and sickness business should refer to OSFI's *Memorandum to the Appointed Actuary on the Report on the Valuation of Life Insurance Policy Liabilities*. The opinion described later in this document, included in the AAR, should cover these related provisions.

5. FORMAT OF THE APPOINTED ACTUARY'S REPORT

5.1 Report Outline

While the format of the AAR differs from Appointed Actuary to Appointed Actuary, most AARs include sections similar to the following:

- Introduction
- Expression of Opinion
- Supplementary Information Supporting the Opinion
- Executive Summary
- Description of Company
- Data
- Claim Liabilities
- Premium Liabilities
- Other Liabilities
- Other Disclosure Requirements
- Unpaid Claims and Loss Ratio Analysis Exhibit
- Exhibits and Appendices

In Section 6 “Contents of the Appointed Actuary’s Report”, the above outline is used to discuss the required contents. The Appointed Actuary is encouraged to use the above outline.

5.2 Table of Contents

A table of contents showing where the above information is located must be included at the beginning of the AAR. The AAR must also include a table of contents for the Exhibits and Appendices.

To facilitate the review, the AAR should include clearly identified sections and numbered pages. Reference to such pages should be part of the table of contents.

6. CONTENTS OF THE APPOINTED ACTUARY’S REPORT

6.1 Introduction

This section should identify the scope of the AAR and should indicate clearly that the AAR is an actuarial valuation report or supports an actuarial opinion. This section should also identify:

- the company involved,
- the date of valuation,
- the identity of the author,
- the author's full address and telephone number, and
- the author's authority for preparing the AAR.

6.2 Expression of Opinion

The Appointed Actuary must use the prescribed opinion format (see Appendix I). The opinion wording is as recommended in the CIA Standards of Practice – Practice-Specific Standards for Insurers. OSFI will consider any opinion that varies from this wording to be a qualified opinion.

Note that:

- **The liability figures carried by the company in the Annual Return must be stated in the opinion.**
- **The liability figures derived by the Appointed Actuary must be stated in the opinion.**

This section must contain an original signature of the Appointed Actuary, the Appointed Actuary's name in type the date and location of signing.

The actuarial opinions presented to the shareholders and policyholders of the company should be essentially the same as the opinions filed with OSFI. Should this not be the case, the Appointed Actuary must disclose in writing to OSFI the material differences between the opinions, as well as the rationale for such differences.

Any qualification or limitation concerning any aspect of the valuation should be noted in this section of the AAR. These qualifications or limitations should be similar to the ones included in the opinion for Canadian Annual Returns presented to the shareholders and policyholders. Caveats or any form of disclaimer should be excluded from the opinion but could be included in Section 6.3 "Supplementary Information Supporting the Opinion".

For branches where the External Auditor Report is not available at the time the Appointed Actuary has to render his/her opinion**, a qualified opinion, conditional upon receiving an unqualified opinion from the External Auditor (Auditor), must be issued. The expected completion date of the external auditor's work should be stated. When the auditor's work is completed, the Appointed Actuary must either:**

a. **file an unqualified opinion with OSFI, or**
b. **file a revised opinion with a supporting AAR issued if the Auditor is unable to give an unqualified opinion or modifies the financial statements.**

6.3 Supplementary Information Supporting the Opinion

Reader of the AAR should be able to understand how the Appointed Actuary's figures, as shown in the opinion, are derived. This section should contain references to the report sections, exhibits and/or appendices where these results are derived or summarized. Where results from several places must be added together, a table should be included.

This section should also include any conditions or limitations pertaining to the policy liabilities.

Consolidated reporting will be required within the P&C Returns. For capital purposes, the consolidated entity includes the parent company and all subsidiaries that carry on business that the parent could carry on directly pursuant to the *Insurance Companies Act*.

The above rule does not apply to life company subsidiaries, which are to be reported using the equity method. OSFI anticipates that most Actuaries will continue to prepare non-consolidated AARs. However, the Appointed Actuary must include an additional exhibit and commentary that reconciles the information within the AAR to the consolidated opinion. Actuaries will be expected to value non-federally regulated subsidiaries under Canadian generally accepted actuarial practices and include these AARs as appendices or as a separate part of the AAR.

6.4 Executive Summary

This section should contain a summary of the key results and findings and any other information the Appointed Actuary wishes to bring to the attention of the reader. In particular, it should comment on the comparison of the actual experience with the expected experience in the prior year end valuation for all lines combined.

It should also reference any significant changes in methods or assumptions from the prior AAR, significant issues and how they were resolved, data or other concerns identified by the Appointed Actuary and any other unusual circumstances identified as part of the valuation. **This section must also include any deviation from CIA Standards of Practice or from the requirements of this memorandum.**

6.5 Description of Company

6.5.1 Ownership and Management

The Appointed Actuary should provide a brief history of the Company covering ownership and senior management. Changes over the past several years should be identified and potential impacts on the valuation as a result of these changes should be discussed.

6.5.2 Business

This section should contain a brief description of the lines/classes of business written, distribution channels and geographic distribution. It should also describe recent changes in business written, underwriting policies, claims policies and procedures as well as the impact of these changes.

6.5.3 Reinsurance

6.5.3.a Reinsurance Arrangement

The Appointed Actuary should describe the company's reinsurance arrangements (type of arrangements, significant terms and conditions, order of application of treaties, and whether the arrangements are specific to the Canadian operations only) and any changes in the arrangements (including changes in retention or limits) during the experience period used in the AAR. This description should be included for all years where the ceded unpaid claims could be material. In many cases, it is useful to include the rationale for the changes (if any). In particular, the Appointed Actuary should identify whether the terms and conditions of the reinsurance/retrocession arrangements require payments to be made from the reinsurer/retrocessionaire directly to the ceding company in Canada, including in the event of the cedant's insolvency.

6.5.3.b Reinsurance Ceded

The provision for reinsurance ceded must be reduced for expected reinsurer defaults, disputes, the time value of money due to delays in payment or other reasons that could reduce the amount recoverable. This reduction is in addition to the unexpected defaults within the reinsurance margin. The AAR should clearly indicate where none of the above reductions are made to the provision for reinsurance ceded.

When making this estimate, the Appointed Actuary will not necessarily assess the financial condition of each reinsurer. However, the existence of any of the following situations and the actions taken should be described:

- a dispute has arisen with a reinsurer;
- a reinsurance collectible is significantly overdue;
- the reinsurer has a history of not settling accounts promptly;
- the reinsurer is known to have been the subject of regulatory restrictions in its home jurisdiction; or
- the reinsurer has a poor credit rating.

It is expected that the Appointed Actuary will discuss reinsurance matters with management and the Auditor of the company to determine whether there are unusual problems and/or delays expected to be encountered in collecting the relevant amounts from the reinsurers.

Where reinsurance agreements were commuted or changed, the Appointed Actuary should clearly indicate how any changed arrangements were taken into account.

6.5.3.c Financial Reinsurance Agreements

The Appointed Actuary must disclose information of any material financial reinsurance agreements ceded where there is not significant insurance risk transfer between the ceding company and the reinsurer, or where there are other reinsurance agreements or side letters that could offset the financial effect of the first reinsurance agreement. If no such agreements exist, the Appointed Actuary must state that there are no material financial reinsurance agreements. The Appointed Actuary should also describe the process used to reach the above conclusion.

The Appointed Actuary should disclose any related party reinsurance that has or could have a material impact on the policy liabilities. The disclosure should include the parties involved, a description of the reinsurance and the impact on policy liabilities.

6.5.4 Materiality Standards

In preparing the company's Annual Return, the company management and the Auditor routinely agree on a level of materiality. The standard of materiality applied for accounting purposes and for valuation of an insurer's policy liabilities must be reported in the AAR. In addition, the Appointed Actuary must report how the materiality standard is selected for the valuation of policy liabilities.

6.6 Data

The AAR should note the extent of the Appointed Actuary's review and verification of the data and the extent of the Appointed Actuary's reliance on data prepared by others. The AAR should also describe the methods and procedures used to ensure that the valuation data are sufficient, reliable and accurate.

In particular the AAR should describe the type of data provided and the review and verification procedures applied thereto and the procedures and steps undertaken to ensure that the valuation data are sufficient, reliable and accurate.

The statutory requirement that the Appointed Actuary file an AAR with the Annual Return assumes that the Appointed Actuary has met the standard of care, as implicitly stated in the CIA Standards of Practice. In particular this requires that the Appointed Actuary establish suitable check procedures to verify that the data utilized is reliable and sufficient for the valuation of policy liabilities.

In the event that the External Auditor's work is not complete when the Appointed Actuary provides his/her opinion, please refer to Section 6.2 Expression of Opinion.

With respect to any line of business (including, more specifically, accident & sickness business, pools and facility associations), the Appointed Actuary should describe 1) any reliance on or use of the work of another actuary; 2) the scope of such reliance; 3) a justification for such reliance and 4) the extent of the review of the other actuary's work should also be described.

6.7 Claim Liabilities

6.7.1 Undiscounted Claim Liabilities

The commentary on the claim liabilities must contain details of the derivation of the gross, ceded and net provisions. Normally the Appointed Actuary will calculate two of these provisions directly and derive the third by addition or subtraction. The provisions calculated directly will depend on the circumstances of the company and the preference of the Appointed Actuary; however, the individual provisions should each be reasonable.

The data, analysis and commentary will normally be provided by actuarial lines of business. These lines will be selected by the Appointed Actuary based on the credibility and homogeneity of the resulting data. Where the actuarial lines of business have changed from the prior AAR, the current year's AAR should clearly state the reasons for the changes. In some cases, it may be appropriate to use different lines of business for the ceded and gross/net provisions.

The commentary should disclose whether or not the company has exposure to mass tort and latent claims, and if the company has had a subsequent event. If the company has such exposure, the Appointed Actuary should discuss the nature and treatment of those claims in the calculation of the provisions for unpaid liabilities.

Where the actuarial lines of business do not include all the business written by the company (e.g. pools and associations), the AAR should clearly indicate the additional amounts and include them in a reconciliation exhibit.

In determining the provision for each actuarial line of business, the Appointed Actuary should consider, at a minimum:

- any significant trends in the severity and frequency of claims,
- any important changes in the coverage of the policies,
- the changes in the cost of reinsurance and/or in reinsurance arrangements,
- any changes in the lags in the reporting of claims and in the payment of claims,
- changes to the loss reserving practices and
- the effects of regulatory changes.

The commentary should discuss the existence of any significant development (adverse or favourable) in the run-off of the reserves that had been set up in prior years, reasons for the development and changes to methods and assumptions that would eliminate the recurrence of any consistent development.

6.7.2 Claims Expenses

Claims expenses are normally split between internal (unallocated) and external (allocated).

Some actuaries combine external expenses with incurred losses and base their analysis on the total of losses and expenses. Other actuaries calculate separate provisions for indemnity and external expenses. Both approaches are acceptable; however, the Appointed Actuary should clearly indicate the approach followed.

A variety of methods are used for internal loss expense provisions. Any method in accordance with accepted actuarial practice is acceptable. The AAR should describe the method(s) as well as any changes in methods from prior AARs. The impact of such changes should be clearly indicated and, if material, included in the Executive Summary.

6.7.3 Comparison of Actual Experience with Expected Experience in Prior Year-End Valuations

In order to assess the effect of changes in the estimated claim liabilities, OSFI requires companies to provide a comparison of Actual Experience with Expected Experience on an undiscounted basis for each actuarial line of business and for all lines combined for 10 years. However, if data for 10 years is not currently available, the Appointed Actuary should comment on this fact but also move toward the 10 year standard. These comparisons must be provided gross and net of reinsurance. Normally these comparisons will include external adjustment expenses, exclude internal adjustment expenses and exclude classes of business not reviewed by the Appointed Actuary (e.g. pools).

Actual Experience refers to the ultimate gross and net undiscounted estimates selected for each accident year for each actuarial line of business valued as of the current year-end (December 31 or October 31). Expected Experience in Previous Year End Valuations refers to the ultimate undiscounted estimates selected by the Appointed Actuary at each of the prior year-ends. If the ultimate undiscounted estimates are not available for a line of business (e.g. tabular reserves), then the ultimate discounted estimates may be used. The AAR must include the total for all lines combined as well as subtotals, where useful.

Where there are changes in the actuarial lines of business, the Appointed Actuary must allocate the actual total claim liabilities from prior AARs to the current actuarial lines of business using a reasonable approximation. For the first year following the change, the AAR should show the development using the old actuarial lines of business as well.

Where the Appointed Actuary uses underwriting/policy year rather than accident year, the Appointed Actuary may show the comparison of actual to expected experience using projected loss ratios based on underwriting/policy year data. In this case, the Appointed Actuary should estimate the dollar impact of the development. This would normally be calculated by multiplying the change in loss ratio by the underwriting/policy year earned premium at the prior year-end.

Whenever significant differences in ultimate estimates occur for any accident year, the Appointed Actuary should provide commentary explaining such changes in ultimate estimates for each accident year. In addition, the Appointed Actuary should discuss any actions taken to reduce the likelihood of similar differences in the future. The Appointed Actuary should update commentary from prior AARs based on the most recent experience. For this section, the Appointed Actuary may use a standard greater than the selected materiality standard to eliminate comments on normal fluctuations in data. A lower standard should be used for individual lines and a moderately higher standard may be used for older accident years to avoid repeating some of the less important comments from prior AARs.

Significant differences may exist between the loss development on page 60.40 of the Annual Report and that shown in the Comparison of Actual Experience. OSFI acknowledges that the company is not required to use the AAR as a basis for completing page 60.40 and that the differences can arise from such items as the allocation of internal loss adjustment expenses, Facility Association and Other Reserves. The Appointed Actuary should inform the Company of any significant differences and include a discussion of the differences in the AAR or indicate that there are no differences.

On a net basis, ultimate loss development is expected to be the same as that calculated by summing over columns (3) and (6) using data from the UCLR Analysis Exhibit in the current AAR compared to data in prior year AARs. The Appointed Actuary should quantify and explain any difference that is expected due to changes to the presentation of data in the UCLR Analysis Exhibit.

6.7.4 Discounted Claim Liabilities

The claim liabilities must be discounted and include appropriate margins as required by CIA Standards of Practice.

The AAR should indicate the discount rate(s) used for the valuation and describe in detail the method used to select the discount rate(s). In particular, the selected discount rate(s) should be reduced by an explicit margin for expected credit-related events, including expected asset default. This deduction is in addition to the unexpected credit risks within the investment return rate margin. The Appointed Actuary should clearly document the rationale for the selections, including where the explicit margin is zero. The AAR should include all supporting exhibits.

The Appointed Actuary should quantify, disclose and justify the impact of changes in selected margins. The Appointed Actuary should also disclose in the Executive Summary cases where the impact of the changes in selected margins is material.

6.8 Premium Liabilities

The premium liabilities are normally calculated by line of business; however, the lines need not be identical to the actuarial lines of business used to estimate the claim liabilities.

OSFI expects the Appointed Actuary to comment on all aspects of components of premium liability, and particularly on the following (Please indicate if not applicable):

- expected losses, loss expenses and servicing costs on the policies in force,
- anticipated broker/agent commission,
- expected adjustments (plus or minus) to swing rated policies,
- expected changes to premiums as a result of audits, late reporting or endorsements and
- expected commission adjustments on policies with variable commissions.

The commentary should disclose whether or not the company has had a subsequent event. If there was a subsequent event, the Appointed Actuary should discuss the nature and treatment of the event in the calculation of the provisions for premium liabilities.

The Appointed Actuary should discount the premium liabilities with appropriate margins as required by CIA Standards of Practice. Where the selected interest rate or margins differ from those used in the Claim Liabilities Section, the AAR should describe the reasons for the selections.

The treatment of the above items may differ by company. The Appointed Actuary must demonstrate that the total of the carried premium liabilities is at least as large as his/her provision.

6.9 Other Liabilities/Other Assets

The Appointed Actuary must comment on the adequacy of reserves, including IBNR, maintained for Self-Insurance Retention (SIR) plans. SIRs represent the portion of a loss that is payable by the policyholder. The Appointed Actuary should include these in their opinion as “other net liabilities”. They should be reported net of reinsurance, not net of the supporting

assets. These supporting assets are to be included in the opinion as "other amounts to recover". The AAR should describe these provisions and provide details of their calculation.

Whenever amounts for salvage and subrogation are material, and therefore presented separately in the Annual Return, the Appointed Actuary must include such amounts in the opinion as "other amounts to recover". The AAR should describe the method used to calculate these amounts.

The AAR opinion should include, with commentary, any other amounts reported as Other Liabilities or Other Assets.

7. OTHER DISCLOSURE REQUIREMENTS

7.1 Dynamic Capital Adequacy Testing (DCAT)

The AAR must disclose the following information with respect to the DCAT reporting in the last three years:

- the date on which the DCAT reports were signed by the Appointed Actuary,
- the date on which the DCAT reports were presented,
- to whom the DCAT reports were presented (e.g. full board, audit committee, chief agent),
- whether the reports were presented in person or only in written form and
- the date used as the start of the projection period in the DCAT reports.

7.2 New Appointment

OSFI expects Appointed Actuaries to comply with the qualification requirements contained in OSFI Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*. The AAR must explicitly disclose any deviations from these qualifications, including future steps being/to be taken to meet the qualification requirements.

If the Appointed Actuary was appointed to the role during the last year, the AAR must include the following disclosures:

- the date of appointment,
- the date of resignation of the previous Appointed Actuary,
- the date on which OSFI was notified of the appointment,
- confirmation of communication with the previous Appointed Actuary, as required by the ICA section 364(1), and
- a list of the Appointed Actuary's qualifications, keeping in mind, but not limited to, the CIA's Rules of Professional Conduct.

7.3 Annual Required Reporting to the Board or Audit Committee

For a Canadian company, the AAR must disclose the date on which the Appointed Actuary met with the board or the audit committee of the board, as required by paragraph 203(3)(f) of the ICA.

For a foreign company, the AAR must disclose the date on which the Appointed Actuary met with the chief agent, as required by section 630 of the ICA.

7.4 Continuing Professional Development Requirements

The Appointed Actuary must disclose in the AAR that he/she is in compliance with the Continuing Professional Development requirements of the CIA.

7.5 Disclosure of Compensation

The Appointed Actuary must disclose their compensation. This disclosure is consistent with the Financial Stability Board's Principles for Sound Compensation Practices, which have been adopted by OSFI. The form of the disclosure statement should be as follows:

> Disclosure of Compensation
>
> I attest that all of my direct and indirect compensation is derived using the following methodology:
>
> _____
>
> _____
>
> _____
>
> _____
>
> I confirm that I have performed my duties as Appointed Actuary without regard to any personal considerations or to any influence, interest, or relationship in respect of the affairs of my client or employer that might impair my professional judgment or objectivity.
>
> I confirm that my ability to act fairly is unimpaired and that there has been full disclosure of the methodology used to derive my compensation (and/or my firm's compensation, if applicable) to all known direct users of my services as Appointed Actuary.

If the Appointed Actuary is an employee of the insurance company, the methodology should include a list of the major components of the Appointed Actuary's compensation. This could include: base salary, cash and/or stock-based bonuses, retirement and other significant benefits, other compensation (e.g. signing bonuses, severance packages), and perquisites (e.g. car allowances).

For each component of the Appointed Actuary's compensation listed above that varies with the performance of the company, the value of that component as a target percentage of the base salary must be disclosed. This might include, but is not limited to, participation in a bonus plan and/or a stock option plan that is based on company performance. The company

must disclose the basis used to determine the amounts of these variable compensation components.

If the Appointed Actuary serves as an external consultant to the company, then the information provided to OSFI must include:

- The consulting fees payable for the preparation of the AAR, DCAT, and any other work performed as the Appointed Actuary in respect of the company's current fiscal year;
- The basis used to determine the consulting fees payable for the Appointed Actuary's work (for example, fixed fee basis, time and expense basis, as well as any caps etc.), and whether the fees include any element of incentive or results-based compensation;
- The proportion that the consulting fees payable for the Appointed Actuary's work for the company represents, as a percentage of the total revenue billed by the consulting firm's Canadian legal entity to the company in the consulting firm's prior fiscal year (<10%, 10-25%, 25-50%, 50-75%, 75%+); and
- The proportion that the consulting fees payable for the Appointed Actuary's work for the company represents, as a percentage of the total revenue billed by the consulting firm's Canadian legal entity to all clients in the consulting firm's prior fiscal year (<10%, 10-25%, 25-50%, 50-75%, 75%+)

Due to its sensitive nature, the "Disclosure of compensation" must be included in a separate cover letter to Christopher Westfield (Christopher.Westfield@osfi-bsif.gc.ca), Actuarial Division at OSFI and, on request, to other Canadian regulators with reference to the cover letter made in the relevant section of the AAR.

7.6 Reporting Relationships of the Appointed Actuary

The AAR should disclose the reporting relationships and dependencies of the Appointed Actuary.

For Appointed Actuaries who are employees of the company, the AAR should disclose the name and position of the person (or persons) to whom the Appointed Actuary reports as well as any changes in this regard over the past year. Both solid line and dotted line reporting relationships should be disclosed, as well any anticipated change.

When the Appointed Actuary is not an employee of the company, the AAR should disclose the names and positions of the main contacts within the company with respect to the different functions of the Appointed Actuary, such as the valuation, DCAT, and MCT support (if any).

For example, the AAR should disclose the name and position of:

- The person who hired the Appointed Actuary; and
- The company employees with whom the Appointed Actuary discusses findings and reports.

7.7 Peer Review of the Work of the Appointed Actuary

OSFI requires the work of the Appointed Actuary to be externally peer reviewed, as set out in OSFI's Guideline E-15, *Appointed Actuary: Legal Requirements, Qualifications and Peer Review*.

For each Peer Review Report filed in the last three years, the Appointed Actuary must complete the following table:

	AAR			DCAT		
(a). Accounting period for work reviewed	2019	2018	2017	Y*	Y-1	Y-2
(b). Peer reviewer name						
(c). Work reviewed and nature of the peer review (e.g. full 3-year or limited annual)						
(d). Peer reviewer date signed						
(e). Date submitted to OSFI						
(f). Date submitted to Audit Committee or Chief Agent						
(g). Whether the Peer Review Report was issued pre-release or post-release						
(h). Year of next full 3-year review						
(i). Next peer reviewer (if known) including the plan and the name of the next reviewer						
(j) End year for last 6 year cycle to change reviewer						

*Y = the most recent year.

In addition, the AAR should indicate when the peer reviewer last reviewed the information, if any, prepared by the Appointed Actuary to assist the insurer in the completion of the MCT (BAAT) schedules in the P&C returns.

For each peer review report, the Appointed Actuary should summarize the key findings or recommendations, and the status of each finding / recommendation by year.

The Appointed Actuary should disclose if no peer reviews were completed in the last three years and the reasons why. Note that such circumstances would be rare and require OSFI pre-approval.

7.8 Re-submitting the report

The AAR must disclose the reason/s for resubmission.

8. UNPAID CLAIMS AND LOSS RATIO ANALYSIS EXHIBIT

8.1 Introduction

The Unpaid Claims and Loss Ratio Analysis Exhibit (UCLR Analysis Exhibit), as shown in Appendix II, is constructed to allow the presentation and collection of industry loss information in a standard format. The compiled information allows for the analysis of the impact of discounting on claims reserves and the analysis of the evolution of loss trends. In order to achieve these objectives, the exhibits are constructed by class of insurance and by accident year and contain information on a current year and on a cumulative year basis.

8.2 Data

A page must be completed for each actuarial line of business and should reconcile to supporting exhibits in the AAR. Each actuarial line of business must be uniquely linked to one, and only one, Annual Return line of business as listed in Appendix III. For reinsurers, proportional and non-proportional business should be reported separately.

The company must specify on each page the basis, on which the Exhibit is completed, either "accident year" or "underwriting year". The selected basis should be the same for all pages. Insurers completing the exhibits on a "report year" basis should select "accident year".

If an actuarial line of business is a combination of two or more Annual Return lines, the Appointed Actuary must determine in which Annual Return line to place it to best represent the operations of the company. For actuarial lines of business where the earned premium is not available in the same detail as the claims (e.g. automobile-liability bodily injury and property damage), the Appointed Actuary should either estimate a split of the earned premium or combine the data showing it in the Annual Return line that best represents the line of business underwritten by the company.

A "Total" page must also be completed; this exhibit should balance to the AAR. An individual page does not have to be completed for a category that is not reviewed by the Appointed Actuary but the total discounted reserves including PfAD for the category must be included in Line 15 ("Other Provisions") of the "Total" page. The Appointed Actuary should also provide a breakdown with commentary in the AAR when "Other Provisions" is greater than the selected materiality.

In the UCLR Analysis Exhibit, the present value of unpaid claims and adjustment expenses (excluding PfADs) (Column [7]) is expected to be less than the total undiscounted unpaid claims and adjustment expenses (Column [6]). If amount in the column [7] is greater than the amount in column [6], the AAR must comment on the reason for the exception.

Claim counts reported in the UCLR Analysis Exhibit should be consistent with the way the Appointed Actuary defines and records claim counts in the AAR. The Appointed Actuary should provide the definition of claim count in the AAR, and describe any changes in the definition from the prior AAR. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), the Appointed Actuary should provide a rationale in the AAR for why claim count cannot be reported.

The definition of claim count could include, if applicable, but not be limited to:

- whether an occurrence with payments for multiple coverages/parties is counted as one claim or multiple claims,
- whether claims with no case outstanding and no payments are included in the definition of reported claim counts, and
- how reopened claims are treated.

The UCLR Analysis Exhibit should be completed on a net basis, with the Appointed Actuary defining "net" in the AAR. For instance, if the Appointed Actuary has completed his or her net analysis gross of intra-group reinsurance, the UCLR Analysis Exhibit should also be completed on this basis. Any adjustments to the net basis as reported in the AAR (e.g. industry pools or inter-company reinsurance) should be made in Lines 14 and 15 of the "Total" page.

The Appointed Actuary is responsible for ensuring the accuracy of the UCLR Analysis Exhibit and accompanying electronic filing.

Note that figures must be expressed in thousands of Canadian dollars.

Appendix IV contains detailed instruction for completing the UCLR Analysis Exhibit.

Effective Q4 2019, the data submission for the UCLRE return is changing from an ASCII format to XML format. Detailed instructions for completing the electronic filing can be found on OSFI's website: *Unpaid Claims and Loss Ratio Analysis Exhibit (UCLRE)*.

9. Appendix I - Expression of Opinion

I have valued the policy liabilities [and reinsurance recoverables] of [the Company] for its [consolidated] [statement of financial position] at [31 December XXXX] and their changes in the [consolidated] [statement of income] for the year then ended in accordance with accepted actuarial practice in Canada including selection of appropriate assumptions and methods.

(Qualifications should be included here)

In my opinion, the amount of policy liabilities [net of reinsurance recoverables] makes appropriate provision for all policy obligations and the [consolidated] financial statements fairly present the results of the valuation.

The results of my valuation together with amounts carried in the Annual Return are the following:

Claim Liabilities	**Carried in Annual Return($'000)**	**Appointed Actuary's Estimate($'000)**
(1) Direct unpaid claims and adjustment expenses		
(2) Assumed unpaid claims and adjustment expenses		
(3) Gross unpaid claims and adjustment expenses		
(4) Ceded unpaid claims and adjustment expenses		
(5) Other amounts to recover		
(6) Other net liabilities		
(7) Net unpaid claims and adjustment expenses (3)-(4)-(5)+(6)		

Premium Liabilities	**Carried in Annual Return ($'000) (Col. 1)**	**Appointed Actuary's Estimate ($'000) (Col. 2)**
(1) Gross policy liabilities in connection with unearned premiums		
(2) Net policy liabilities in connection with unearned premiums		
(3) Gross unearned premiums		
(4) Net unearned premiums		
(5) Premium deficiency		
(6) Other net liabilities		
(7) Deferred policy acquisition expenses		
(8) Maximum policy acquisition expenses deferrable $[(4)+(5)+(9)]_{Col.\ 1} - (2)_{Col.\ 2}$		
(9) Unearned Commissions + Ceded Deferred Premium Taxes + Ceded Deferred Insurance Operations Expenses		

FCIA
Signature of Appointed Actuary

Date opinion was rendered

FCIA
Printed name of Appointed Actuary

Location opinion was rendered

The language in square brackets is variable and other language may be adjusted to conform to interim financial statements and to the terminology and presentation in the financial statements.

10. Appendix II - Unpaid Claims and Loss Ratio Analysis Exhibit

Unpaid Claims and Loss Ratio Analysis Exhibit (030)

(All amounts are on a Net basis and in $'000)

Exhibit Category Code: Total

Actuary's Category Code : Total

Aggregation Type Code:

			Paid Losses[a]		Unpaid Claim Analysis[a]										Loss Ratio Analysis[a]		Claim Counts		As at Prior Year-end	
						Undiscounted Unpaid Claims and Adjustment Expenses				Provision and Margin for Adverse Deviation (PfAD and MfAD)										
Line no	Year code	Accident/ Underwriting Year	Current Year (XXXX)	Cumulative (XXXX and Prior)	Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions	Case Reserves	IBNR	Total	Present Value of Unpaid Claims and Adjustment Expenses - Total	PfAD: Claims ($'000)	MfAD: Claims (%)	PfAD: Reinsurance ($'000)	PfAD: Interest Rate ($'000)	Discounted Reserves Including PfAD	Earned Premiums	Undiscounted Loss Ratio (%)	Open as at Year-end	Reported to Date	Total Undiscounted Unpaid Claims and Adjustment Expenses[a]	Reported Claim Counts to Date
		(01)	(02)	(03)	(22)	(04)	(05)	(06)	(07)	(08)	(09)	(10)	(11)	(12)	(13)	(16)	(18)	(19)	(20)	(21)
			m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11	m12	m13	m14	m15	m16	m17	m18
1	01	XXXX-10 & Prior																		
2	02	XXXX-9																		
3	03	XXXX-8																		
4	04	XXXX-7																		
5	05	XXXX-6																		
6	06	XXXX-5																		
7	07	XXXX-4																		
8	08	XXXX-3																		
9	09	XXXX-2																		
10	10	XXXX-1																		
11	11	XXXX																		
12	99	Total																		

APV Reserves including ULAE, FA and Other (040)

13		ULAE - Total	m19	
14		"Facility Association" and "Plan"	m20	
15		Other Provisions	m21	
16		Grand Total	m22	

a) Including Allocated loss adjustment expenses (ALAE), but excluding Unallocated loss adjustment expenses (ULAE), except for lines 13 to 15.

Unpaid Claims and Loss Ratio Analysis Exhibit (030)

(All amounts are on a Net basis and in $'000)

Exhibit Category Code: _____

Actuary's Category Code : _____

Aggregation Type Code: _____

			Paid Losses[a]		Unpaid Claim Analysis[a]										Loss Ratio Analysis[a]		Claim Counts		As at Prior Year-end	
Line no	Year code	Accident Year	Current Year (XXXX)	Cumulative (XXXX and Prior)	Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions	Undiscounted Unpaid Claims and Adjustment Expenses			Present Value of Unpaid Claims and Adjustment Expenses - Total	Provision and Margin for Adverse Deviation (PfAD and MfAD)				Discounted Reserves Including PfAD	Earned Premiums	Undiscounted Loss Ratio (%)	Open as at Year-end	Reported to Date	Total Undiscounted Unpaid Claims and Adjustment Expenses[a]	Reported Claim Counts to Date
						Case Reserves	IBNR	Total		PfAD: Claims ($'000)	MfAD: Claims (%)	PfAD: Reinsurance ($'000)	PfAD: Interest Rate ($'000)							
		(01)	(02)	(03)	(22)	(04)	(05)	(06)	(07)	(08)	(09)	(10)	(11)	(12)	(13)	(16)	(18)	(19)	(20)	(21)
			m1	m2	m3	m4	m5	m6	m7	m8	m9	m10	m11	m12	m13	m14	m15	m16	m17	m18
1	01	XXXX-10 & Prior																		
2	02	XXXX-9																		
3	03	XXXX-8																		
4	04	XXXX-7																		
5	05	XXXX-6																		
6	06	XXXX-5																		
7	07	XXXX-4																		
8	08	XXXX-3																		
9	09	XXXX-2																		
10	10	XXXX-1																		
11	11	XXXX																		
12	99	Total																		

MfAD and Interest Rate (050)

17		MfAD: Reinsurance (%)	m23	
18		MfAD: Interest Rate (%)	m24	
19		Interest Rate to Discount Unpaid Claims and Adjustment Expenses (%)	m25	

a) Including Allocated loss adjustment expenses (ALAE), but excluding Unallocated loss adjustment expenses (ULAE)

11. Appendix III – Annual Return Lines of Business

- Property-Personal
- Property-Commercial
- Aircraft
- Automobile-Liability - Private Passenger
- Automobile-Personal Accident - Private Passenger
- Automobile-Other - Private Passenger
- Automobile-Liability - Other than Private Passenger
- Automobile-Personal Accident - Other than Private Passenger
- Automobile-Other - Other than Private Passenger
- Boiler and Machinery
- Credit
- Credit Protection
- Fidelity
- Hail
- Legal Expense
- Liability
- Mortgage
- Other Approved Products
- Surety
- Title
- Marine
- Accident and Sickness

12. Appendix IV - Unpaid Claims and Loss Ratio Analysis Exhibit

12.1 Information Contained in the Unpaid Claims and Loss Ratio Analysis Exhibits (by Column)

The UCLR Analysis Exhibit contains amounts segregated by accident years (refer to Section 12.3 for instructions on other than an accident year basis). All amounts entered on the UCLR Analysis Exhibit should be expressed in Canadian dollars and rounded to the nearest thousand dollars.

Columns 03, 13, 16, 19, 21 and 22 must be completed for the past 10 accident years while columns 02, 04 through 12, 18 and 20 must be completed for all accident years.

12.1.1 Column 01 – Accident Year or Underwriting Year

Column 01 of the exhibit represents the segregation by accident/underwriting year, as specified in Aggregation Type Code. Line 11 represents the most recent accident/underwriting year, lines 02 to 10 represent the nine prior accident/underwriting years and line 01 represents all prior years to line 02.

12.1.2 Column 02 – Paid Losses: Current Year

Column 02 represents the paid claims and paid allocated adjustment expenses for the current calendar year.

Paid losses for Accident year XXXX-10 & Prior should be reported in Line 1.

12.1.3 Column 03 – Paid Losses: Cumulative

Column 03 represents the cumulative paid claims and paid allocated adjustment expenses for all calendar years.

12.1.4 Column 04 – Undiscounted Unpaid Claims and Adjustment Expenses: Case Reserves

Undiscounted case basis reserves of the unpaid claims and allocated adjustment expenses are presented in column 04. If the claim liabilities are case reserved on a discounted basis (e.g. tabular reserves), the discounted case reserves are to be entered.

12.1.5 Column 05 – Undiscounted Unpaid Claims and Adjustment Expenses: IBNR

Undiscounted incurred but not reported reserves are shown in column 05. These reserves also include any adjustment for the deficiency or redundancy of the case reserves (also known as the broad definition of IBNR) presented in column 04. The undiscounted IBNR includes all amounts related to the undiscounted unpaid allocated adjustment expenses. If the undiscounted claim liabilities for a line are not available, (e.g. tabular reserves), then the discounted IBNR should be entered.

12.1.6 Column 06 – Undiscounted Unpaid Claims and Adjustment Expenses: Total

This is the total of columns 04 and 05.

12.1.7 Column 07 – Present Value of Unpaid Claims and Adjustment Expenses: Total

Present value case basis reserves and IBNR of the unpaid claims and allocated adjustment expenses are presented in column 07. The underlying rule to be respected with the completion of the UCLR Analysis Exhibit is that the amounts shown should correspond to those calculated by the Appointed Actuary in the AAR. Do not add any PfAD to this column.

12.1.8 Column 08 – Provision for Adverse Deviation (PfAD): Claims

The provision for adverse deviation on claims is presented in column 08.

12.1.9 Column 09 – MfAD: Claims (%)

This column is the margin for adverse deviation and is equal to the ratio of column 08 to column 07.

12.1.10 Column 10 – PfAD: Reinsurance

The provision for reinsurance adverse deviation is presented in column 10.

12.1.11 Column 11 – PfAD: Interest Rate

A provision for interest rate adverse deviation is presented in column 11.

12.1.12 Column 12 – Discounted Reserves Including PfAD

Column 12 is the result of the following formula:

$$Column(07) + Column(08) + Column(10) + Column(11)$$

Note: for the "Total" exhibit, amounts for column 12 are entered on line 13 (ULAE – Total), line 14 (Facility Association and Plan) and line 15 (Other Provisions) as well as line 16 (Grand Total). Lines 13 through 16 are included only in the "Total" exhibit.

12.1.13 Column 13 – Earned Premiums

Earned premiums are shown separately by accident year. Net earned premiums are reported and developed at ultimate where development is possible, for example, where experience rating is used.

12.1.14 Column 16 – Loss Ratio (%): Undiscounted

The undiscounted loss ratio is calculated using the following formula:

100 x [*Column*(03) + *Column*(06)] / *Column*(13)

12.1.15 Column 18 – Open Claim Counts as at Year-end

Open claim counts for an accident/underwriting year refer to the number of claims that has not been settled or on which payments are still being made as at the current year-end. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

12.1.16 Column 19 – Reported Claim Counts to Date

Reported claim counts for an accident/underwriting year refer to cumulative reported claim counts as at the current year-end. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

12.1.17 Column 20 – Total Undiscounted Unpaid Claims and Adjustments Expenses As at Prior Year-end

This is equal to column 06 from the corresponding pages of the prior UCLR Analysis Exhibit. Where there are changes in the actuarial lines of business or the reinsurance/retrocession arrangements, the Appointed Actuary must allocate total undiscounted unpaid claims and adjustment expenses from the prior AAR to the current actuarial line of business, based on the current reinsurance/retrocession arrangements, using a reasonable approximation.

12.1.18 Column 21 – Reported Claim Counts to Date as at Prior Year-end

This is equal to column 19 from the corresponding pages of the prior UCLR Analysis Exhibit. When the actuarial lines of business or definition of claim count have changed from the prior AAR, the AA must allocate reported claim counts to date from the prior AAR to the current actuarial line of business and definition of claim count using a reasonable approximation. If it is difficult to obtain claim count information (e.g. reinsurers, assumed business, etc.), this column should be left blank (i.e. not zero) and the Appointed Actuary should provide a rationale in the AAR.

12.1.19 Column 22 – Bornhuetter-Ferguson Initial Expected Loss Ratio Assumptions

This is the expected loss ratio assumptions used in the Bornhuetter-Ferguson (B-F) or the Expected Loss Ratio (ELR) method to estimate ultimate loss for the current year's valuation. If neither the B-F nor the ELR method is considered for an actuarial line of business, this column should be left blank (i.e. not zero).

12.2 Information Contained in the Unpaid Claims and Loss Ratio Analysis Exhibit (by Line)

The amounts contained in lines 1 to 12 of UCLR Analysis Exhibit exclude all paid and unpaid ULAE.

12.2.1 Line 13 – ULAE - Total

Discounted unpaid ULAE, including provisions for adverse deviation (PfAD), are entered in line 13 in the "Total" exhibit but excluded entirely from the other exhibits.

12.2.2 Line 14 – "Facility Association" and "Plan"

The discounted unpaid claims of all automobile pools (e.g. Facility Association, Ontario Risk Sharing Pool and Plan de Répartition des Risques) are entered in line 14 (Facility Association and Plans) of the "Total" exhibit but excluded from all the other exhibits.

12.2.3 Line 15 – Other Provisions

The discounted unpaid claims for all other provisions (e.g. non-material lines of business, non-automobile industry pools and inter-company reinsurance) are entered in line 15 (Other Provisions) of the "Total" exhibit.

12.2.4 Line 16 – Grand Total

This is the total of lines 12 through 15 of column 12 of the "Total" exhibit. The Grand Total should balance to the Appointed Actuary's Estimate of net unpaid claims and adjustment expense in the Opinion Page.

12.2.5 Line 17 – MfAD: Reinsurance (%)

The margin for adverse deviation on reinsurance is presented in line 17. If the margins vary by year, a weighted average of margins that produces the same total PfAD should be entered.

12.2.6 Line 18 – MfAD: Interest Rate (%)

The margin for adverse deviation on interest rate is presented in line 18. If the margins vary by year, a weighted average of margins that produces the same total PfAD should be entered.

12.2.7 Line 19 – Interest Rate to Discount Unpaid Claims & Adjustment Expenses (%)

The interest rate entered on this line should include an explicit provision for asset default – cross reference with Section 6.7.4. Do not subtract interest rate MfAD from this line. If the interest rates vary by year, a weighted average of interest rate that produces the same total present value of unpaid claims and adjustment expenses should be entered.

12.3 Claims Reported on Other than an Accident Year Basis

Normally, the UCLR Analysis Exhibit will be completed on an accident year basis (year in which the claim was incurred).

However, some insurers may have used a basis other than accident year when completing the AAR. This includes reinsurers reporting on an underwriting year basis (year when the policy is written) as well as insurers writing policies on a claim-made basis who declare on report year (year when the claim is reported). These insurers may encounter difficulties in completing the UCLR Analysis Exhibit on an accident year basis.

It is recommended that the basis that is most suited to the company's operation be used to complete the exhibits. Insurers completing the exhibits on an underwriting year basis must advise OSFI. In such case, line 15 (Other Provisions) of the "Total" exhibit must be adjusted so that line 16 (Grand Total) equals to the net unpaid claims and adjustment expenses reported in the opinion page of the AAR.

Guideline

Subject: **Own Risk and Solvency Assessment**

Category: **Sound Business and Financial Practices**

No:	**E-19**	**Date:**	**December 2017**
		Effective Date:	**January 1, 2018**

This guideline sets out OSFI's expectations with respect to the Own Risk and Solvency Assessment (ORSA) of federally regulated insurers (insurer).[1]

The ORSA should reflect an insurer's own risk and solvency assessment. OSFI expects an insurer to have processes in place to conduct an ORSA that is proportionate to the nature, scale and complexity of its business and risk profile.

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[1] Insurer refers to federally regulated insurers including Canadian branches of foreign life and property and casualty companies, fraternal benefit societies, regulated insurance holding companies and non-operating insurance companies.

I. Introduction

This guideline outlines OSFI's expectations with respect to an insurer's own assessment of its risks, capital[2] needs and solvency position, and for setting Internal Targets[3], based on an insurer's Own Risk and Solvency Assessment (ORSA).

The ORSA should serve as a tool to enhance an insurer's understanding of the interrelationships between its risk profile and capital needs. The ORSA should consider all reasonably foreseeable and relevant material risks, be forward-looking and be congruent with an insurer's business and strategic planning.

As the ORSA is a dynamic forward-looking process, stress and scenario testing should be an important component used in an insurer's determination of its own capital needs and as it sets and evaluates the adequacy of its Internal Targets and operating capital level throughout the business cycle.

This guideline addresses the scope of the ORSA, its relation to enterprise risk management, the role of Senior Management[4]and other participants in performing, monitoring, reporting or reviewing the ORSA, and other key elements of the assessment process.

OSFI, in its normal course supervisory monitoring, may review the company's ORSA including related documentation and reports. OSFI will consider this information in its assessment of inherent risks and risk management practices. OSFI does not approve an insurer's ORSA.

For further guidance and considerations about the identification, assessment, management and other aspects of risk, insurers may also consult other OSFI guidelines or publications such as: *Supervisory Framework*, Guidelines *B-2: Large Exposure Limits, Investment Concentration Limit for Property and Casualty Insurance Companies* and Guideline B-3: *Sound Reinsurance Practices and Procedures.*

For further guidance and considerations about stress and scenario testing, insurers may also consult sources such as OSFI's Guideline E 18: *Stress Testing* and actuarial standards of practice with respect to an insurer's Dynamic Capital Adequacy Testing (DCAT).

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[2] With respect to Canadian branches of foreign insurers, the term "capital" in this guideline includes the parallel concept of "margin of assets over liabilities".

[3] Guideline A-4: *Regulatory Capital and Internal Capital Targets* outlines OSFI's expectations with respect to Internal Targets.

[4] For foreign company branch operations in Canada, OSFI looks to the Chief Agent to oversee the management of the branch.

II. Scope

OSFI expects the ORSA to be tailored to and cover the consolidated operations of an insurer. An insurer's capital assessment should consider the risks of its domestic and foreign operations as well as group risks. It should also consider the availability of capital and assets in each jurisdiction for on-going viability and for the protection of policyholders and creditors of each insurance entity.

The ORSA can be prepared either on an individual insurer basis or on a group basis (Group ORSA). Where the Group ORSA includes, in addition to the consolidated operations of an individual insurer, the operations of other related insurers or the operations of its parent or home office, it should give adequate consideration to the business and risk profile of the individual insurer and the particular circumstances of the relevant markets in which it operates (e.g. by using relevant subsets of group data and modified methodologies, tools and/or assumptions) to yield own capital needs and Internal Targets that are appropriate for the individual insurer. The components of the Group ORSA that are used in or otherwise support an individual insurer's ORSA should be consistent with the expectations of this guideline.

When an insurer's business and risk profiles or circumstances are not adequately reflected in a Group ORSA, or its own capital needs and Internal Targets are not adequately determined or supported using a Group ORSA, OSFI expects the insurer to have a separate ORSA that covers only the consolidated operations of the insurer and not the operations of its parent, home office or other related insurers.

III. ORSA and Enterprise Risk Management

In conducting its ORSA, an insurer should determine its own capital needs and establish its Internal Targets based on an internal assessment of all material risks, including the results of the enterprise risk management process[5]. The existence of a robust enterprise risk management framework enhances the ability of an insurer to effectively reflect risks in its ORSA.

Enterprise risk management, along with related controls and governance mechanisms, and the ORSA should be well integrated so that the information, analysis and results from both processes are consistent. The same is true for other processes that either feed into the ORSA or are impacted by ORSA results.

[5] For further guidance on enterprise risk management, refer to OSFI's sound business and financial practices guideline: *Corporate Governance*.

IV. Key Elements

The ORSA should contain, at a minimum, certain key elements and considerations, including:

I. Comprehensive Identification and Assessment of Risks

II. Relating Risk to Capital

III. Oversight

IV. Monitoring and Reporting

V. Internal Controls and Objective Review

There is no single correct approach to an ORSA, and one approach will not fit all insurers. Therefore, these key elements and considerations are broadly stated and it is understood that the manner with which some of these elements are integrated in an insurer's ORSA may vary by company.

Comprehensive Identification and Assessment of Risks

An insurer's ORSA should identify, define and assess the materiality of all known, reasonably foreseeable, emerging and other relevant risks that may have an impact on an insurer's ability to continue operations, in both normal and stressed situations. An insurer's identified risks are expected to evolve as its business activities and environment evolve.

The assessment should include all material risks, whether these are explicitly captured in the regulatory capital framework or not, as well as risks that are not easily quantifiable.

Some risks can be broken down into other more discrete risks and may take different forms depending on the nature of the business and activities of an insurer. The ORSA should give proper consideration to non-material risks that, when combined with other non-material risks, become material. For example, risk categorisation or break down should not produce a lower assessment of own capital needs that would otherwise result if related risks were combined or aggregated.

Insurers should document underlying assumptions, processes and key considerations with regard to the drivers, the assessment, measurement and mitigants in place for each risk. The appendix *Supplementary Risk Considerations* includes other risk identification and assessment considerations.

Relating Risk to Capital

As part of its ORSA, an insurer is expected to set Internal Targets. These should normally be determined without undue reliance on regulatory capital measures.

Before an insurer gives consideration to external constraints, Internal Targets should be, first and foremost, based on an insurer's assessment of its own capital needs. For example, Internal Targets should normally not be determined by simply adding a margin on the Supervisory Targets. However, as stress and scenario testing should be an integral part of an insurer's process

for determining its Internal Targets, consideration of the results of these tests may cause an insurer to add explicit capital cushions/buffers to complement its initial assessment of own capital needs and set its Internal Targets so it can withstand a specified level of losses without falling below the Supervisory Targets[6].

Nature, Scale and Complexity

The ORSA is an internal assessment process, tailored to an insurer's own view of its risk profile and appetite, and reflective of the nature, scale and complexity of the insurer.

Insurers are expected to use more sophisticated methods to estimate the amount of own capital needed for material complex risks they take on or are exposed to. For less material and less complex risks, or for those that are not readily quantifiable, insurers may opt for simpler quantitative analysis (e.g. generally accepted prudent factors or extremely severe but plausible deterministic stress scenarios) combined with well documented qualitative considerations, and incorporate these amounts into their overall assessment of capital adequacy.

Determining Own Capital Needs

In conducting an ORSA, insurers should determine whether or not, for each risk, an explicit amount (quantity) of capital should be held and how the results for each risk should be aggregated. In doing so, insurers' own capital assessments will reflect their choice of data sets, distributions, measures, confidence levels, time horizons, valuation approaches, financial tools and methodologies, appropriate to their unique profile.

The approaches and tools used should be calibrated to determine the total amount of capital needed to cover extremely severe losses. Aggregated, these losses should represent the insurer's total quantity of capital that it needs to absorb the losses and be left with an equal amount of assets and liabilities.

Insurers are expected to consider publications and professional and other research materials dealing with quantification of risks and risk mitigants such as:

- Regulators, consulting firms, professional and other associations, academia, credit rating agencies and other purveyors of research, data, models and publications relating to the measurement of risks and risk mitigants;
- Empirical data, evidence and studies of the different and varying manifestations of historical and potential new risks in different markets for similar and dissimilar business activities and products;
- Developments in the insurance, financial and other markets and their potential impact on the continued appropriateness of current measurement tools, data and assumptions used by the insurer;

[6] Supervisory Target capital levels are not applicable to regulated insurance holding companies and non-operating insurance companies.

- Benchmarking exercises with respect to risk measurement and mitigation tools and their results, whether in the insurance sector or in other sectors where similar risks exist.

When giving consideration to various methodologies, tools or resulting factors, insurers should consider, among other things, that these may be calibrated using a confidence level/time horizon that is different from what the insurer desires, calibrated at an unspecified confidence level/time horizon or designed for a different purpose (e.g. scenario and stress testing can be used to gain a better understanding of risks and identify potential management actions that an insurer can take or its ability to continue to meet regulatory requirements during a stressful event). In these cases, the insurer should make adjustments to the methodology, tool or resulting factor so that the ORSA results are appropriate for determining its own capital needs.

When discrete methods (e.g. sensitivity testing, statistical analysis) are used for determining own capital needs with respect to individual risks, the assessment may not identify or measure dependencies or inter-relations that cause some risks to be greater in the presence of other stresses to other risks. To complement the assessment of individual risks, other tools (e.g. stochastic models or multi-dimensional deterministic scenarios of extremely severe but plausible past, potential or theoretical events) may be used to uncover potential impacts that are due to concentrations, dependencies and interactions between risks. The appendix *Supplementary Risk Considerations* includes other considerations for relating risks to own capital needs.

Setting Internal Targets

Once an insurer has determined its own capital needs, these initial results should be assessed to determine if they are appropriate in relation to external or third party capital expectations[7], including OSFI's expectation that Internal Targets exceed Supervisory Targets[8].

In setting Internal Targets, an insurer should assess the adequacy of its Capital Resources for supporting its current risk profile, and enabling it to continue its current operations[9] in the normal course, under varying degrees of stress and under a wind-up scenario.

Therefore, in addition to the process described above to determine an insurer's own capital needs, an insurer should also consider the impact of a range or series of adverse scenarios (e.g. an economic downturn) of varying nature or severity and its ability to avoid supervisory interventions (i.e. not fall below its Supervisory Targets) or continue as a going concern (i.e. not fall below the Minimums[10]). The results of stress testing per OSFI's Guideline E-18: *Stress Testing*, along with other single and combined forward-looking stress and reverse stress tests, including an insurer's Dynamic Capital Adequacy Testing (DCAT) scenarios, can be directly incorporated, referenced or otherwise used in the ORSA for setting an insurer's Internal Targets.

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7 For example: securities, insurance or other regulators and credit rating agencies.

8 As outlined in Guideline A-4: *Regulatory Capital and Internal Capital Targets*.

9 In determining capital needed to support an insurer's current risk profile and for continuing its current operations, it is expected that an insurer would, for example, assume that its current capital needs include any amount required to support short-term insurance contract renewals at the current business level.

10 As defined in Guideline A-4: *Regulatory Capital and Internal Capital Targets*.

As outlined in OSFI's Guideline A-4, while all insurers are expected to determine an Internal Target of total capital, life insurers are expected to also determine an Internal Target of core capital. Core capital should serve to reduce the likelihood of insolvency, both in normal times and during periods when the insurer is under stress. When setting a core capital Internal Target, a life insurer should consider its target capital composition/mix and its assessment of the characteristics and quality of Capital Resources.

With respect to Canadian branches of foreign insurers, the determination and assessment of the composition of the margin of assets over liabilities may not include all of the same considerations that are relevant for determining and assessing the quality of capital instruments needed or issued by insurers if the branch does not raise capital within Canada. However, the ORSA should include many of the same considerations with respect to the quality of the assets vested in trust in Canada and other assets under the control of the Chief Agent in Canada that support the liabilities in Canada and how these are recognized and valued for capital adequacy purposes.

Integration with Other Business Processes

The ORSA is a forward-looking process. It should be consistent with an insurer's strategic and business planning and should contemplate the potential adverse capital impacts over an insurer's planning horizon (e.g. 3 to 5 years). An insurer's ORSA process should be consistent with and linked to the enterprise risk management and other management processes. For example, quantifiable estimates of risks that are used for ORSA purposes should be consistent with or feed into the decision making process and, where appropriate, have other business uses.

The assessment of adequacy of capital should also consider the capital needed to support an insurer's longer term business strategies and, in particular, new business and planned growth. Considering this, an insurer should determine an appropriate level or range of capitalization at which it operates, set above its Internal Targets. In determining an operating level, an insurer should consider the impact of future planned, foreseen and likely potential changes to its risk profile due to changes in its operations, its business strategy or its operating environment. For example, it should consider a series of varying adverse scenarios and, at a certain operating level, assess the insurer's ability to continue operating and not fall below its Internal Targets. It should also evaluate whether long-run Internal Targets are consistent with short-run goals, and adjust its operating levels as appropriate; recognizing that accommodating additional capital needs or additional risk mitigants can require significant lead time.

In this context, an insurer should relate its capital needs to, for example, potential changes in risks, anticipated growth, acquisitions and divestments, potential group needs and limits on fungibility/transfer of capital, plans to access external sources of capital and the level of capital desired to enable the insurer to take identified potential countervailing actions against a stress event at an acceptable cost.

All material risks, including those that are difficult to quantify in the ORSA, should be subject to internal controls. An insurer should identify relevant countervailing measures and actions that could be taken to improve its solvency position, should it be negatively impacted by economic downturns or other stress events. These may include, for example, raising additional capital,

slowing or ceasing new business, entering into reinsurance arrangements, implementing changes to product pricing and/or changes to business mix.

Oversight

A sound risk management and oversight process should assist an insurer in performing an effective assessment of its own capital needs, in determining its Internal Targets and in assessing the adequacy of its current and likely future solvency position. In this context, the establishment of appropriate policies, procedures, systems, controls and personnel for identifying, analysing, assessing, monitoring and measuring its risk exposures can improve the quality and effectiveness of the ORSA.

Senior Management should have a good understanding of the nature and significance of the risk exposures of the insurer, the related risk mitigants, risk management tools/techniques and oversight processes and how these relate to adequate levels of capital. Senior Management should review the appropriateness of the formality and sophistication of the methods used to quantify risks and risk mitigants as well as the risk management and reporting processes vis-à-vis the Risk Appetite Framework[11] and the general risk profile and business plans of the insurer.

The ORSA should assist the insurer in its risk assessment, risk management and planning by exploring and assessing potential threats to an insurer's capital and solvency positions. For example, the results of stress scenario tests should be used to identify actions that could be taken either to lessen the likelihood of such threats occurring or to mitigate the impact of an adverse scenario, should one actually occur.

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of insurer Boards of Directors in regards to operational, business, risk and crisis management policies.

Monitoring and Reporting

The ORSA should be performed on a regular basis so that it continues to provide relevant information for an insurer's management processes. It should be clearly and formally documented in a report at least annually and more often if circumstances warrant, for example when there are changes to the insurer's risk profile or risk appetite.

The ORSA report should contain sufficient information about the process, underlying principles, methodologies, key assumptions, key sensitivity information and overall results relative to the risk appetite, strategic and operational plans and capital management framework of the insurer. The report should be used by the insurer to assess the appropriateness of the ORSA, including the overall results and the quality/composition of its capital, and confirm the insurer's Internal Targets.

[11] Refer to OSFI's *Corporate Governance Guideline* for additional guidance in this area.

An insurer's Senior Management should receive regular and timely reports on the insurer's risks and capital. These reports should allow Senior Management to:

- Evaluate the level and trend of material risks and their potential effect on capital;
- Evaluate the sensitivity and reasonableness of assumptions used in the risk and capital assessment and measurement process;
- Determine that the insurer holds sufficient capital in relation to established capital adequacy targets and goals (both internal and regulatory/external);
- Evaluate the adequacy of capital using stresses and scenarios;
- Assess future capital needs (e.g. dividend plans, issuance/retirement of capital instruments and capital fungibility constraints) and make any adjustments to the insurer's strategic, capital and other plans, as necessary;

The monitoring and reporting process should take into account the current and forecasted business environments and should, consistent with the risk and capital adequacy assessment, be adjusted when appropriate so that capital remains adequate during periods when the insurer is under stress and through entire business cycles.

Internal Controls and Objective Review

An insurer's internal control structure is essential to the quality of its ORSA. An insurer's Senior Management reviews the insurer's method for monitoring and reporting on compliance with internal policies as well as the system for assessing risks and for relating risks to the insurer's own capital needs. Senior Management should satisfy itself that the insurer's system of internal controls continues to be adequate for well-ordered and prudent conduct of business, including the quality of its ORSA process.

An insurer should conduct regular reviews of its ORSA process for integrity, accuracy, and reasonableness. Areas that should be reviewed include, among others:

- Comprehensiveness and appropriateness of an insurer's assessment process, given the insurer's nature, scale and complexity, the soundness of the controls underpinning it, and OSFI's expectations with respect to the ORSA process;
- Governance mechanisms related to the assessment and review by the insurer of group processes used in its operations, where the insurer uses a group ORSA;
- Process for identification of risks, large exposures, risk concentrations, dependencies and interactions;
- Appropriateness of the methodologies, distributions and measures and accuracy and completeness of financial and quantitative data inputs;
- Reasonableness and validity of the ORSA results, including the embedded assumptions and inputs from stress tests, scenarios, models and other methodologies and tools used in the assessment process;
- Reasonableness of the individual risk and other components and overall ORSA results;

- Consistency of the ORSA results with an insurer's risk limits and risk appetite;
- Appropriateness of the documentation that supports the ORSA and the contents of the ORSA report;
- Effectiveness of information systems that support the ORSA;
- Consistency and linkages of the ORSA process and results with the risk management, strategic, business and capital planning processes.

The ORSA, including the ORSA report, should be subject to periodic objective reviews. The objective review may be conducted by an internal or external auditor, by a skilled and experienced internal or external resource or by a skilled and experienced individual, who reports directly to or is a member of the Board.

An objective reviewer should not be responsible for nor have been actively involved in the part of the ORSA that it reviews. For example, where the internal auditor is not otherwise involved in the process, the ORSA may be included in the internal audit plan so that it is covered within the audit cycle.[12]

V. Interaction of the ORSA with the Supervisory Review

OSFI assesses capital adequacy at multiple levels. An insurer should have sufficient capital to meet Minimum and Supervisory Target regulatory capital, as well as sufficient capital to support its risk profile, (i.e. Inherent and Net Risks of its significant activities and Overall Net Risk (ONR)) as determined through the OSFI's *Supervisory Framework*.

OSFI may review the ORSA and, upon request, the ORSA report (and/or other supporting documentation) in its assessment of the risk profile of an insurer to determine whether the ORSA is consistent with OSFI's understanding and assessment of the insurer's risk appetite and risk profile.

The depth and frequency of supervisory review of an insurer's ORSA will be proportional to the nature, scale and complexity of its activities, and the risks assumed by an insurer as assessed through OSFI's *Supervisory Framework*.

The supervisory review of the ORSA is not intended to prescribe how an insurer should perform, use or report on its ORSA. Rather, the review allows for dialogue on OSFI's assessment of inherent risk, capital and Composite Risk Rating (CRR), and of an insurer's ORSA including:

- The approach/methodology, assumptions, data and other considerations (e.g. level of confidence and rationale) supporting internal estimates of risks that are also explicitly captured in the regulatory capital guidelines;
- Risks not fully captured (e.g. concentration, contagion and aggregation of risks) and/or not explicitly captured (e.g. reputation and strategic risk) by regulatory capital guidelines;

[12] OSFI may request that a report by an objective reviewer be prepared and made available at a specific date so it can be included in a planned review of an insurer's ORSA.

- External factors, where not already considered in the previous points, including stress testing, impact of economic cycles and other external risks;
- The level and quality of the insurer's capital, and the quality of the assessment by the insurer using a range of stress scenarios included or referenced in the ORSA;
- Limitations of the insurer's ORSA;
- Other regulatory requirements and expectations or market considerations;
- Identification of best practices and potential gaps arising from a cross-sector review of ORSA;
- How and to whom ORSA related information is communicated and how ORSA issues or limitations are shared with users and appropriately elevated to relevant parties within the insurer.

In addition to quantitative efforts, OSFI understands and expects that expert judgement will be necessary to operationalize an insurer's assessment and measurement of risks and to integrate those results into the overall assessment of own capital needs and the determination of Internal Targets. The ORSA is a process and a tool that OSFI expects will be used to support insurers risk and capital assessment, on-going management, governance and other decision making activities; therefore, both the quantitative and the qualitative aspects of the ORSA are equally important.

– END –

Appendix – Supplementary Risk Considerations

The risk considerations contained within this appendix do not constitute an exhaustive list of exposures and factors that insurers should consider for purposes of the ORSA and for establishing Internal Targets. Rather, they provide some examples that may be relevant for a particular insurer and that may be used when exploring and assessing risks in the context of the ORSA.

Comprehensive Identification and Assessment of Risks

Emerging/Evolving risks

Certain risks may be identified based on possible new developments or emerging trends in the internal or external environment. While some may have been reviewed and found to be non-material, others may not have yet been defined or evaluated. Also, risks that were once considered immaterial may become material as the insurer's environment changes.

The ORSA should consider how risks may evolve and what measurement and management techniques are required for monitoring purposes.

Risk transfer/Mitigation activities

Insurers should be cognizant of any risks that may exist within certain risk transfer or risk mitigation activities (such as reinsurance, hedging or securitization transactions), and how these would behave under stress conditions. Resulting new or additional risks such as credit/counterparty and operational risk should be taken into consideration.

Cross border activities

Insurers that operate in multiple jurisdictions or otherwise engage in cross border investments and transactions with foreign counterparties may be subject to increased risk including: country risk, concentration risk, foreign currency risk (market risk) as well as regulatory, legal, compliance and operational risks. Laws and regulators' actions in foreign jurisdictions could make it much more difficult to realize on assets and security in the event of a default.

An insurer's ORSA should consider these types of activities and assess the controls, capital or assets needed in support of the regulatory, legal and compliance risks associated with concentrations in cross border activities. If an insurer has operations in foreign jurisdictions where restrictions on fungibility or access to capital apply (or could apply), where there is potential ring-fencing of funds, or where minimum/target regulatory capital requirements exceed levels in Canada, this should also be clearly identified and taken into account in setting both group-wide capital needs and Internal Targets for individual insurers.

Relating Risk to Capital *(Determining Own Capital Needs)*

This guideline does not provide a list of available approaches, methodologies or tools. As a result ORSA practices across insurers are likely to vary. For example, some insurers may:

- consider that their assessment of a material complex risk or set of risks would be best performed through the use of sophisticated internal models;
- determine that developing complex internal models for a material complex risk, although desirable, is not feasible and, as a result, select somewhat simpler, less refined approaches and compensate with more prudent assumptions that nonetheless yield reasonable estimates of own capital needs;
- expend considerable effort to develop an advanced methodology to assess a specific complex risk which they believe will give them a competitive advantage in the market and allow for improved capital allocation;
- choose to rely heavily on qualitative considerations, including expert judgement, for risks that are difficult to quantify and for which measurement results vary significantly depending on the approach and method used;
- develop complex methodologies to aggregate results and estimate the capital needs for concentrations, dependencies and risk interactions along with prudent benefits of diversification;
- choose a simple aggregation approach producing cruder results that achieve little or no diversification benefits.

Aggregation/Diversification Adjustment

Where risk aggregation/diversification adjustment benefits are applied in an insurer's ORSA, they should be validated and calibrated by the insurer on a regular basis. Insurers should be prudent in their assessment of aggregation/diversification benefits and should consider whether such benefits exist in periods of stress. When giving consideration to the benefits of diversification, equal consideration should be given to the potential concentrations, dependencies and interactions of risks that may cause the total impact to be greater than the sum of the impact of the risks considered individually.

Concentrations, Dependencies and Interactions of Risks

Situations in which risk concentrations, dependencies and interactions can arise include, among others, exposures to:

- one or many severe or extremely severe events/scenarios and their knock-on effects;
- a series of many small events/scenarios or individual claims and their knock-on effects;
- a common cause across many underwriting years (e.g. asbestos, pollution, etc.);
- one or very few reinsurers or other counterparties, or connections between counterparties;
- one or very few products/lines of business or sources of business/assets;
- geographical regions.

Risk concentrations, dependencies and interactions can arise through a combination of exposures across these and other broad categories. An insurer should have an understanding of its insurance, market, credit and other risk concentrations, dependencies and interactions resulting from exposures within and across its different business lines.

Office of the Superintendent of Financial Institutions Canada
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SUPERVISORY FRAMEWORK

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SUPERVISORY FRAMEWORK

OSFI'S ROLE

The Office of the Superintendent of Financial Institutions (OSFI) is an independent agency of the Government of Canada established in 1987 to contribute to public confidence in, and the safety and soundness of, the Canadian financial system. OSFI supervises and regulates federally registered banks and insurers, trust and loan companies, cooperative credit associations, and fraternal benefit societies, as well as private pension plans subject to federal oversight, and ensures that they are complying with their governing legislation.

When OSFI identifies issues that may impact the stability of the financial system, it reports them to the Financial Institutions Supervisory Committee[1].

OSFI supervises financial institutions in accordance with its Supervisory Framework, first introduced in 1999 and updated in 2010 in this document. Supervision of pension plans is guided by a similar but separate Framework[2].

[1] The Financial Institutions Supervisory Committee ("FISC") meets on a quarterly basis to facilitate the exchange of information among OSFI, the Department of Finance, the Bank of Canada, Canada Deposit Insurance Corporation, and the Financial Consumer Agency of Canada on matters relating to the supervision of federally regulated financial institutions.

[2] Available on OSFI's website, under "Pension Plans/Risk Assessment Framework".

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INTRODUCTION

THE SUPERVISORY FRAMEWORK

The Supervisory Framework describes the principles, concepts, and core process that OSFI uses to guide its supervision of federally regulated financial institutions (FRFIs). These principles, concepts, and core process apply to all FRFIs in Canada, irrespective of their size, and accommodate the unique aspects of the deposit-taking, life insurance, and property and casualty insurance sectors.

Supervision involves assessing the safety and soundness of FRFIs, providing feedback as appropriate, and using powers for timely intervention where necessary. Its primary goal is to safeguard depositors and policyholders from loss. As such, the focus of supervisory work is determining the impact of current and potential future events, both internal to a FRFI and from its external environment, on the risk profile of the FRFI.

SUPERVISION'S PRIMARY GOAL IS TO SAFEGUARD DEPOSITORS AND POLICYHOLDERS FROM LOSS.

Since OSFI's Supervisory Framework was first introduced in 1999, significant developments in the financial services industry have changed the nature of the risks and risk management of financial institutions. For example, product sophistication has increased, globalization has caused risks to become more systemic, and financial institutions have experienced multiple and severe stresses to their solvency and liquidity. Meanwhile, international standards and requirements for supervising financial institutions have also been strengthened.

The updated Supervisory Framework described in this document reflects the enhancements OSFI has made to address these changes, and the experience gained from applying the 1999 Framework over the past ten years. In summary, these enhancements continue to make OSFI's risk-based supervision as dynamic and forward-looking as possible and help ensure that OSFI can respond effectively to changes in the Canadian and international financial sectors, now and in the future.

STATUTORY OBLIGATIONS

The Supervisory Framework is designed to assist OSFI in meeting its statutory obligations set out in the *Office of the Superintendent of Financial Institutions Act (OSFI Act)* and other governing legislation regarding the supervision of FRFIs. These obligations are broad and overarching, and to meet them in practice requires detailed and consistent standards and criteria for supervising FRFIs.

INTERNATIONAL EXPECTATIONS

OSFI has adopted the Basel Committee on Banking Supervision's "Core Principles for Effective Banking Supervision", and the International Association of Insurance Supervisors' "Insurance core principles and methodology" as its sources for detailed supervisory standards and criteria. These methodologies specify international expectations for banking and insurance supervision. OSFI applies these methodologies within the context of its mandate and the nature of the financial services industry in Canada.

GENERAL APPROACH

CONSOLIDATED SUPERVISION

The supervision of Canadian financial institutions is conducted on a consolidated basis, which involves an assessment of all of a FRFI's material entities (including all subsidiaries, branches and joint ventures), both in Canada and internationally. OSFI uses information available from other regulators as appropriate.

RELATIONSHIP MANAGER

OSFI designates a relationship manager (RM) for each FRFI. The RM is responsible for maintaining an up-to-date risk assessment of the FRFI. Specialists and other staff within OSFI help support this work. The RM is the main point of contact for the FRFI.

PRINCIPLES-BASED SUPERVISION

The supervision of FRFIs is principles-based. It requires the application of sound judgment in identifying and assessing risks, and determining, from a wide variety of supervisory and regulatory options available, the most appropriate method to ensure that the risks that a FRFI faces are adequately managed.

SUPERVISORY INTENSITY AND INTERVENTION

The intensity of supervision will depend on the nature, size, complexity and risk profile of a FRFI, and the potential consequences of the FRFI's failure. Where there are identified risks or areas of concern, the degree of intervention will be commensurate with the risk assessment, and in accordance with the Guide to Intervention for Federal Financial Institutions[3].

BOARD AND SENIOR MANAGEMENT ACCOUNTABILITY

A FRFI's Board of Directors and Senior Management are responsible for the management of the FRFI and ultimately accountable for its safety and soundness and compliance with governing legislation. OSFI's mandate to supervise includes apprising FRFIs of situations having material risk that it has identified during its work, and recommending or requiring corrective actions to be taken. OSFI also looks to the Board and Senior Management to be proactive in providing OSFI with timely notification of important issues affecting the FRFI.

RISK TOLERANCE

While OSFI's supervision will reduce the likelihood that FRFIs will fail, the *OSFI Act* explicitly recognizes that FRFIs operate in a competitive environment and need to take reasonable risks. As such, FRFIs can experience financial difficulties that could lead to their failure.

RELIANCE ON EXTERNAL AUDITORS

OSFI relies upon FRFIs' external auditors for the fairness of the financial statements. OSFI's assessment of a FRFI's overall financial performance depends upon the FRFI's audited financial statements.

[3] Available on OSFI's website, under "About OSFI/How We Regulate".

USE OF THE WORK OF OTHERS

OSFI uses, where appropriate, the work of others to reduce the scope of its supervisory work and minimize duplication of effort. This enhances both OSFI's efficiency and its effectiveness. For example, as supervisors do not perform audit work, they may use the detailed testing performed by a FRFI's external auditor and Internal Audit function to help them assess the effectiveness of controls. Similarly, they may use the detailed analysis performed by a FRFI's Risk Management function to help them assess the effectiveness of the FRFI's models.

External sources of work that may be of use to OSFI are the FRFI's external auditor and appointed actuary, as well as the FRFI's oversight functions, which include the Financial, Compliance, Actuarial, Risk Management, Internal Audit, Senior Management and Board functions. Other useful external sources include rating agencies, industry groups, foreign regulators, consultants, and other domestic and international organizations.

KEY PRINCIPLES

Risk assessment—the fundamental work activity of supervision—is undertaken by following seven key principles.

PRINCIPLE #1

FOCUS ON MATERIAL RISK

The risk assessment OSFI performs in its supervisory work is focused on identifying material risk to a FRFI, such that there is the potential for loss to depositors or policyholders.

PRINCIPLE #2

FORWARD-LOOKING, EARLY INTERVENTION

Risk assessment is forward-looking. This view facilitates the early identification of issues or problems, and timely intervention where corrective actions need to be taken, so that there is a greater likelihood of the satisfactory resolution of issues.

PRINCIPLE #3

SOUND PREDICTIVE JUDGMENT

Risk assessment relies upon sound, predictive judgment. To ensure adequate quality, OSFI management requires that these judgments have a clear, supported rationale.

PRINCIPLE #4

UNDERSTANDING THE DRIVERS OF RISK

Risk assessment requires understanding the drivers of material risk to a FRFI. This is facilitated by sufficient knowledge of the FRFI's business model (i.e., products and their design, activities, strategies and risk appetite), as well as the FRFI's external environment. The understanding of how risks may develop and how severe they may become is important to the early identification of issues at a FRFI.

PRINCIPLE #5

DIFFERENTIATE INHERENT RISKS AND RISK MANAGEMENT

Risk assessment requires differentiation between the risks inherent to the activities undertaken by the FRFI, and the FRFI's management of those risks – at both the operational and oversight levels. This differentiation is crucial to establishing expectations for the management of the risks and to determining appropriate corrective action, when needed.

PRINCIPLE #6

DYNAMIC ADJUSTMENT

Risk assessment is continuous and dynamic in order that changes in risk, arising from both the FRFI and its external environment, are identified early. OSFI's core supervisory process is flexible, whereby identified changes in risk result in updated priorities for supervisory work.

PRINCIPLE #7

ASSESSMENT OF THE WHOLE INSTITUTION

The application of the Supervisory Framework culminates in a consolidated assessment of risk to a FRFI. This holistic assessment combines an assessment of earnings and capital in relation to the overall net risk from the FRFI's significant activities, as well as an assessment of the FRFI's liquidity, to arrive at this composite view.

PRIMARY RISK ASSESSMENT CONCEPTS

The Supervisory Framework uses many concepts to enable a common approach to risk assessment across FRFIs and over time. The primary concepts are described below.

1. SIGNIFICANT ACTIVITIES

The fundamental risk assessment concept within the Supervisory Framework is that of a significant activity. A significant activity is a line of business, unit or process that is fundamental to the FRFI's business model and its ability to meet its overall business objectives (i.e., if the activity is not well managed, there is a significant risk to the organization as a whole in terms of meeting its goals).

OSFI identifies significant activities using various sources including the FRFI's organization charts, strategic business plan, capital allocations, and internal and external reporting. This facilitates a close alignment between OSFI's assessment of the FRFI and the FRFI's own organization and management of its risks, and enables OSFI to make use of the FRFI's information and analysis in its risk assessment.

Judgment is used in selecting significant activities, which may be chosen for quantitative reasons (such as the activity's percentage of total FRFI assets, revenue, premiums written, net income, allocated capital, or its potential for material losses), and/or qualitative reasons (such as its strategic importance, planned growth, risk, effect on brand value or reputation, or the criticality of an enterprise-wide process).

2. INHERENT RISK

In the Supervisory Framework, the key inherent risks are assessed for each significant activity of a FRFI. The definition of inherent risk is directly related to OSFI's mandate to protect depositors and policyholders. Inherent risk is the probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events. A material loss is a loss or combination of losses that could impair the adequacy of the capital of a FRFI such that there is the potential for loss to depositors or policyholders.

Inherent risk is intrinsic to a significant activity and is assessed without regard to the size of the activity relative to the size of the FRFI, and before considering the quality of the FRFI's risk management. A thorough understanding of both the nature of the FRFI's activities and the environment in which these activities operate is essential to identify and assess inherent risk.

OSFI uses the following six categories to assess inherent risk: credit risk; market risk; insurance risk; operational risk; regulatory compliance risk; and strategic risk. For each significant activity, the key inherent risks are identified and their levels are assessed as **low, moderate, above average,** or **high**. The categories and levels of inherent risk are described in more detail in Appendix A.

OSFI does not view reputational risk as a separate category of inherent risk. It is a consequence of each of the six inherent risk categories. Accordingly, it is an important consideration in the assessment of each inherent risk category.

Based on the key inherent risks identified for a significant activity and their levels, supervisors develop expectations for the quality of risk management. The higher the level of inherent risk, the more rigorous the day-to-day controls and oversight expected. State-of-the-art controls are expected where appropriate.

3. QUALITY OF RISK MANAGEMENT

OSFI assesses the quality of risk management (QRM) at two levels of control. These are:

OPERATIONAL MANAGEMENT

Operational management for a given significant activity is primarily responsible for the controls used to manage all of the activity's inherent risks on a day-to-day basis. Operational management ensures that there is a clear understanding by FRFI line staff of the risks that the activity faces and must manage, and that policies, processes, and staff are sufficient and effective in managing these risks. When assessing operational management, OSFI's primary concern is whether operational management is capable of identifying the potential for material loss that the activity may face, and has in place adequate controls.

> INHERENT RISK IS THE PROBABILITY OF A MATERIAL LOSS DUE TO EXPOSURE TO, AND UNCERTAINTY ARISING FROM, CURRENT AND POTENTIAL FUTURE EVENTS.

In general, the extent to which OSFI needs to review the effectiveness of operational management of a significant activity depends on the effectiveness of the FRFI's oversight functions (see page 6). In a FRFI with sufficient and effective oversight functions, it may often be possible for OSFI to assess the effectiveness of operational management for a given activity using the work of the oversight functions. However, this approach does not preclude the need for OSFI to periodically validate that key day-to-day controls are effective.

OVERSIGHT FUNCTIONS

Oversight functions are responsible for providing independent, enterprise-wide oversight of operational management. There are seven oversight functions that may exist in a FRFI: Financial; Compliance; Actuarial; Risk Management; Internal Audit; Senior Management; and the Board (see Appendix B). The presence and nature of these functions are expected to vary based on the nature, size and complexity of a FRFI and its inherent risks. Where a FRFI lacks some of the oversight functions, they are not sufficiently independent, or they don't have enterprise-wide responsibility, OSFI expects other functions, within or external to the FRFI, to provide the independent oversight needed.

For each significant activity, OSFI assesses operational management and each of the relevant oversight functions as **strong, acceptable, needs improvement,** or **weak**. The appropriate rating is determined by comparing the nature and levels of the FRFI's controls or oversight to OSFI's expectations developed when assessing the levels of the key inherent risks.

THE IMPORTANCE OF THE NET RISK OF THE SIGNIFICANT ACTIVITY IS A JUDGMENT OF ITS CONTRIBUTION TO THE OVERALL RISK PROFILE OF THE FRFI.

For each relevant oversight function present in a FRFI, OSFI also determines an overall rating (**strong, acceptable, needs improvement,** or **weak**) that reflects the quality of the function's oversight across the entire FRFI (see Appendix B). OSFI has Assessment Criteria that guide the determination of the overall rating for each oversight function. The assessment includes a determination of the direction of the quality of oversight (**improving, stable,** or **deteriorating**).

4. NET RISK

NET RISK** IS **INHERENT RISK(S) AFTER MITIGATION BY ***QRM***

For each significant activity, the level of net risk is determined based on judgment that considers all of the key inherent risk ratings and relevant QRM ratings for the activity. Net risk is rated **low, moderate, above average,** or **high**. Appendix C shows typical net risk ratings for combinations of inherent risk and QRM ratings. The net risk assessment includes a determination of the direction of net risk (**decreasing, stable,** or **increasing**).

OSFI expects a FRFI to maintain controls and oversight that are commensurate with the key inherent risks, so that levels of net risk are considered prudent by OSFI. Where levels of net risk are considered imprudent, a FRFI is expected to address the situation by either improving QRM or reducing inherent risk.

5. IMPORTANCE AND OVERALL NET RISK

The importance of the net risk of the significant activity is a judgment of its contribution to the overall risk profile of the FRFI. Importance is rated as **low, medium,** or **high**. The significant activities assigned higher importance ratings are the key drivers of the overall risk profile.

The net risks of the significant activities are combined, by considering their relative importance, to arrive at the Overall Net Risk of the FRFI. The Overall Net Risk is an assessment of the potential adverse impact that the significant

activities of the FRFI collectively could have on the earnings performance and adequacy of the capital of the FRFI, and hence on the depositors or policyholders. Overall Net Risk is rated as **low, moderate, above average,** or **high**, and the direction is assessed as **decreasing, stable,** or **increasing**.

6. EARNINGS

Earnings are an important contributor to a FRFI's long-term viability. Earnings are assessed based on their quality, quantity and consistency as a source of internally-generated capital. The assessment takes into consideration both historical trends and the future outlook, under both normal and stressed conditions. Earnings are assessed in relation to the FRFI's Overall Net Risk.

Earnings are rated as **strong, acceptable, needs improvement,** or **weak**, and their direction is assessed as **improving, stable,** or **deteriorating**.

7. CAPITAL

Adequate capital is critical for the overall safety and soundness of FRFIs. Capital is assessed based on the appropriateness of its level and quality, both at present and prospectively, and under both normal and stressed conditions, given the FRFI's Overall Net Risk. In the case of foreign branches, OSFI considers the adequacy of capital equivalency deposits and vested assets. The effectiveness of the FRFI's capital management processes for maintaining adequate capital relative to the risks across all of its significant activities is also considered in the assessment. FRFIs with higher Overall Net Risk are expected to maintain a higher level and quality of capital and stronger capital management processes.

Capital is rated as **strong, acceptable, needs improvement,** or **weak**, and its direction is assessed as **improving, stable,** or **deteriorating**.

8. LIQUIDITY

Adequate balance sheet liquidity is critical for the overall safety and soundness of FRFIs. OSFI assesses liquidity at a FRFI by considering the level of its liquidity risk and the quality of its liquidity management. Liquidity risk arises from a FRFI's potential inability to purchase or otherwise obtain the necessary funds to meet its on- and off-balance sheet obligations as they come due. The level of liquidity risk depends on the FRFI's balance sheet composition, its funding sources, its liquidity strategy, and market conditions and events. FRFIs are required to maintain, both at present and prospectively, a level of liquidity risk and liquidity management processes that are prudent, under both normal and stressed conditions.

Liquidity is rated as **strong, acceptable, needs improvement,** or **weak**, and the direction is assessed as **improving, stable,** or **deteriorating**.

9. THE RISK MATRIX AND COMPOSITE RISK RATING

A Risk Matrix (see Appendix D) is used to record all of the assessments described above. The purpose of the Risk Matrix is to facilitate a holistic risk assessment of a FRFI. This assessment culminates in a Composite Risk Rating (CRR).

The CRR is an assessment of the FRFI's risk profile, after considering the assessments of its earnings and capital in relation to the Overall Net Risk from its significant activities, and the assessment of its liquidity. The CRR is OSFI's assessment of the safety and soundness of the FRFI with respect to its depositors and policyholders. The assessment is over a time horizon that is appropriate for the FRFI, given changes occurring internally and in its external environment. Composite Risk is rated **low, moderate, above average** or **high**. The assessment is supplemented by the Direction of Composite Risk, which is OSFI's assessment of the most likely direction in

which the CRR may move. The Direction of Composite Risk is rated as **decreasing, stable,** or **increasing**.

The CRR of a FRFI is used in determining its stage of intervention, which is described in the Guide to Intervention for Federal Financial Institutions. Appendix E shows the combinations of Composite Risk Ratings and intervention ratings usually assigned.

While the Risk Matrix is a convenient way to summarize OSFI's conclusions of risk assessment, it is supported by detailed documentation of the analysis and rationale for the conclusions.

THE CORE SUPERVISORY PROCESS

OSFI uses a defined process to guide its FRFI-specific supervisory work: the first step is planning supervisory work; the second is executing supervisory work and updating the risk profile; and the third is reporting and intervention. This process is dynamic, iterative and continuous, as shown below:

Performing supervisory work in this fashion helps keep OSFI's risk assessments current and future oriented, which is vital to its ongoing effectiveness.

1. PLANNING SUPERVISORY WORK

A supervisory strategy for each FRFI is prepared annually. The supervisory strategy identifies the supervisory work necessary to keep the FRFI's risk profile current. The intensity of supervisory work depends on the nature, size, complexity and risk profile of the FRFI.

The supervisory strategy outlines the supervisory work planned for the next three years, with a fuller description of work for the upcoming year. The supervisory strategy is the basis for a more detailed annual plan, which indicates the expected work and resource allocations for the upcoming year.

Supervisory work for each significant activity is planned and prioritized after considering the net risk assessment of the activity (including the types and levels of inherent risk, the quality of risk management, and any potential significant changes in these), the need to update OSFI's information on the activity (due to information decay), and the importance of the activity. Similarly, supervisory work for each relevant oversight function is planned and prioritized after considering the assessment of the quality of its oversight, and the need to update OSFI's information on the function.

In addition to FRFI-specific planning, OSFI's planning also includes a process to compare the work effort across FRFIs. This is done to ensure that assessments of risk for individual FRFIs are subject to a broader standard, and that supervisory resources are allocated effectively to higher-risk FRFIs and significant activities.

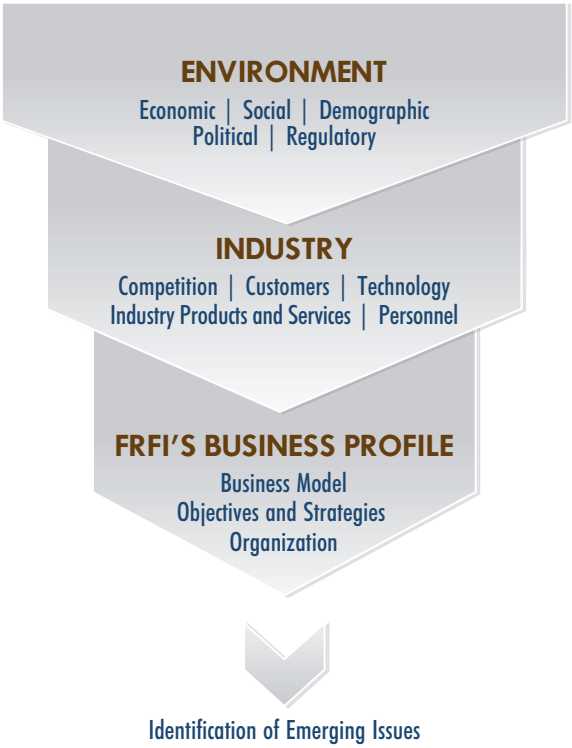
2. EXECUTING SUPERVISORY WORK AND UPDATING THE RISK PROFILE

There is a continuum of supervisory work that ranges from monitoring (FRFI-specific and external), to limited off-site reviews, to extensive on-site reviews, including testing or sampling where necessary.

Monitoring refers to the regular review of information on the FRFI and its industry and environment, to keep abreast of changes that are occurring or planned in the FRFI and externally, and to identify emerging issues.

FRFI-specific monitoring includes the analysis of the FRFI's financial results, typically considering its performance by business line and vis-à-vis its peers, and any significant internal developments. It may also extend to gathering information on non-regulated entities which have a significant influence on the FRFI, such as a holding company or foreign parent company. FRFI-specific monitoring usually also includes discussions with the FRFI's management, including oversight functions.

Given the dynamic environment in which FRFIs operate, OSFI also continuously scans the external environment and industry, gathering information as broadly as possible, to identify emerging issues. Issues include both FRFI-specific and system-wide concerns. OSFI periodically requires FRFIs to perform specific stress tests which OSFI uses to assess the potential impact of changes in the operating environment on individual FRFIs or industries. Environmental scanning and stress testing have increased in importance since the Supervisory Framework was first introduced in 1999; changes in the external environment are a main driver of rapid changes in FRFI risk profiles.



Reviews refer to more extensive supervisory work than monitoring. The nature and scope of information reviewed, and the location of the review ("off-site" at OSFI premises when the scope of the review is limited or "on-site" at the FRFI's premises when the scope is more extensive), are based on the specific requirements identified in the planning process. When an on-site review is conducted, OSFI may request information from the FRFI in advance. Reviews include discussions with FRFI management, including oversight functions.

In addition to the core supervisory work of monitoring and reviews, OSFI frequently undertakes comparative or benchmarking reviews to identify standard and best industry practices.

As supervisory work is conducted, the RM updates the overall risk profile of the FRFI. The Risk Matrix and supporting documentation detail OSFI's

formal assessment of the FRFI's business model and associated safety and soundness, both current and prospective. Key documents are subject to sign-off protocols within OSFI.

When there are shifts in the risk assessment of the FRFI, OSFI responds by adjusting work priorities set out in the supervisory strategy and annual plan, as necessary, to ensure that important matters emerging take precedence over items of lesser risk. Such flexibility is vital to OSFI's ability to meet its legislated mandate.

3. REPORTING AND INTERVENTION

TO FRFIs

In addition to ongoing discussions with FRFI management, OSFI communicates to FRFIs through various formal, written reports.

Annually, or as appropriate, the RM writes a Supervisory Letter to the FRFI. The Supervisory Letter is the primary written communication to the FRFI. It summarizes OSFI's key findings and recommendations (and requirements, as necessary) based on the supervisory work that was conducted since the last Supervisory Letter was issued, and discloses or affirms the FRFI's Composite Risk Rating.

Supervisory Letters to Canadian companies are addressed to the Chief Executive Officer (CEO) and copied to the Chair of the Audit Committee (and Risk Committee, where applicable). Supervisory Letters to Canadian branches of foreign companies are addressed to the Principal Officer or Chief Agent of the branch. Where there are significant issues with a Canadian branch or subsidiary of a foreign company, a copy of the Supervisory Letter is sent to the CEO and the Chair of the Audit Committee at the home office or parent company. In all cases, OSFI requests that a copy of the Supervisory Letter be provided to the external auditor, and to the appointed actuary where applicable.

During the year, OSFI may also issue an Interim Letter to the FRFI so as to provide the FRFI with timely feedback on issues arising from a specific body of supervisory work. The Interim Letter is sent to the appropriate senior manager within the FRFI, and a copy may also be provided to other individuals within the FRFI, if warranted.

With both types of letters, findings and recommendations are discussed with the FRFI before the letter is issued. A letter is generally issued within 45 calendar days of the completion of a review. The FRFI is typically asked to provide a response within 30 calendar days. OSFI analyzes the FRFI's response for appropriateness, and follows up on the FRFI's actions on a timely basis.

Both types of letters remind FRFIs that applicable Supervisory Information Regulations prohibit them from disclosing, directly or indirectly, prescribed supervisory information, including Supervisory Letters, except as provided for in the regulations.

TO OTHER CANADIAN AND FOREIGN REGULATORS

OSFI shares its letters with the Canada Deposit Insurance Corporation (CDIC) and provincial regulators with whom it has agency agreements. Reporting to these parties is in accordance with their respective agreements.

In accordance with the *OSFI Act*, OSFI is also permitted to share information pertaining to compliance with Part 1 of the *Proceeds of Crime (Money Laundering) and Terrorist Financing Act* with the Financial Transactions and Reports Analysis Centre of Canada (FINTRAC).

In addition, OSFI shares information, as appropriate, with foreign regulators with which it has a home-host relationship and a Memorandum of Understanding. Such information-sharing may take place when OSFI hosts or attends supervisory colleges.

In all cases, the confidentiality of information is respected.

FINANCIAL INSTITUTIONS SUPERVISORY COMMITTEE ("FISC") AND SENIOR ADVISORY COMMITTEE ("SAC")[4]

As part of its ongoing supervisory work, OSFI monitors FRFIs and also scans the financial system in which they operate. In doing so, OSFI is able to identify issues that may impact the stability of the financial system. Where OSFI identifies such issues, it reports them to FISC and/or SAC, as appropriate, for further discussion and the determination of any necessary actions.

Information received from FISC and SAC members according to their unique mandates also, in turn, informs OSFI's environmental scanning and identification of broad issues that may impact specific FRFIs.

TO THE MINISTER OF FINANCE

OSFI reports annually to the Minister of Finance on the safety and soundness of FRFIs and their compliance with the governing legislation.

[4] The Senior Advisory Committee ("SAC") is a non-statutory body chaired by the Deputy Minister of Finance. The membership of the SAC is the same as FISC. The SAC operates as a consultative body and provides a forum for policy discussion on issues pertaining to the financial sector.

APPENDIX A – INHERENT RISK CATEGORIES AND RATINGS

CATEGORIES

CREDIT RISK

Credit risk arises from a counterparty's potential inability or unwillingness to fully meet its on- and/or off-balance sheet contractual obligations. Exposure to this risk occurs any time funds are extended, committed, or invested through actual or implied contractual agreements.

Components of credit risk include: loan loss/ principal risk, pre-settlement/replacement risk and settlement risk.

Counterparties include: issuers, debtors, borrowers, brokers, policyholders, reinsurers and guarantors.

MARKET RISK

Market risk arises from potential changes in market rates, prices or liquidity in various markets such as for interest rates, credit, foreign exchange, equities, and commodities. Exposure to this risk results from trading, investment, and other business activities which create on- and off-balance sheet positions.

Positions include: traded instruments, investments, net open (on- and off-) balance sheet positions, assets and liabilities, and can be either cash or derivative (linear or options-related).

INSURANCE RISK

Insurance risk arises from the potential for claims or payouts to be made to policyholders or beneficiaries. Exposure to this risk results from adverse events occurring under specified perils and conditions covered by the terms of an insurance policy. Typical insured perils include: accident, injury, liability, catastrophe, mortality, longevity, and morbidity.

Insurance risk includes uncertainties around:

a) the ultimate amount of net cash flows from premiums, commissions, claims, payouts, and related settlement expenses,

b) the timing of the receipt and payment of these cash flows, and

c) policyholder behavior (e.g., lapses).

Although the business of insurance contributes to the investment portfolio of an insurer, actual or imputed investment returns are not elements of insurance risk.

OPERATIONAL RISK

Operational risk arises from potential problems due to inadequate or failed internal processes, people and systems, or from external events. Operational risk includes legal risk i.e., potential unfavourable legal proceedings. Exposure to

operational risk results from either normal day-to-day operations (such as deficiencies or breakdowns in respect of transaction processing, fraud, physical security, money laundering and terrorist financing, data/information security, information technology systems, modeling, outsourcing, etc.) or a specific, unanticipated event (such as Enron-like litigation, court interpretations of a contract liability, natural disasters, loss of a key person, etc.).

REGULATORY COMPLIANCE RISK

Regulatory compliance risk arises from a FRFI's potential non-conformance with laws, rules, regulations, prescribed practices, or ethical standards in any jurisdiction in which it operates.

STRATEGIC RISK

Strategic risk arises from a FRFI's potential inability to implement appropriate business plans and strategies, make decisions, allocate resources, or adapt to changes in its business environment.

RATINGS

A material loss is a loss or combination of losses that could impair the adequacy of the capital of a FRFI such that there is the potential for loss to depositors or policyholders.

LOW

Low inherent risk exists when there is a lower than average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

MODERATE

Moderate inherent risk exists when there is an average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

ABOVE AVERAGE

Above average inherent risk exists when there is an above average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

HIGH

High inherent risk exists when there is a higher than above average probability of a material loss due to exposure to, and uncertainty arising from, current and potential future events.

APPENDIX B – QUALITY OF RISK MANAGEMENT CATEGORIES AND OVERALL RATINGS

CATEGORIES

OPERATIONAL MANAGEMENT

Operational management is responsible for planning, directing and controlling the day-to-day operations of a significant activity of a FRFI.

OVERSIGHT FUNCTIONS

Financial

Financial is an independent function responsible for ensuring the timely and accurate reporting and in-depth analysis of the operational results of a FRFI in order to support decision-making by Senior Management and the Board. Its responsibilities include:

- providing financial analysis of the FRFI's and business line/unit performance and the major business cases to Senior Management and the Board, highlighting matters requiring their attention; and
- ensuring an effective financial reporting and management information system.

THE PRESENCE AND NATURE OF OVERSIGHT FUNCTIONS ARE EXPECTED TO VARY BASED ON THE NATURE, SIZE AND COMPLEXITY OF A FRFI AND ITS INHERENT RISKS.

Compliance

Compliance (including the Chief Anti-Money Laundering Officer) is an independent function with the following responsibilities:

- setting the policies and procedures for adherence to regulatory requirements in all jurisdictions where the FRFI operates;
- monitoring the FRFI's compliance with these policies and procedures; and
- reporting on compliance matters to Senior Management and the Board.

Actuarial

Actuarial is an independent function, applicable only to FRFIs with insurance business, with responsibilities beyond the legal requirements of the appointed actuary that could include the following:

- evaluating the design, pricing and valuation of the insurance products offered by the FRFI;
- assessing the reasonableness of provisions set for policy liabilities, and the appropriateness of the process followed;
- reviewing models used to determine exposures, and the adequacy of reinsurance programs to mitigate these exposures;
- analyzing stress testing results, and the process used, to establish the adequacy of capital and capital planning for the FRFI under adverse conditions; and

- reporting on the results of its work to Senior Management and the Board.

Risk Management

Risk Management is an independent function responsible for the identification, assessment, monitoring, and reporting of risks arising from the FRFI's operations. Its responsibilities typically include:

- identifying enterprise-wide risks;
- developing systems or models for measuring risk;
- establishing policies and procedures to manage risks;
- developing risk metrics (e.g., stress tests) and associated tolerance limits;
- monitoring positions against approved risk tolerance limits and capital levels; and
- reporting results of risk monitoring to Senior Management and the Board.

Internal Audit

Internal Audit is an independent function with responsibilities that include:

- assessing adherence to, and the effectiveness of, operational controls and oversight, including corporate governance processes; and
- reporting on the results of its work on a regular basis to Senior Management and directly to the Board.

Senior Management

Senior Management is responsible for directing and overseeing the effective management of the general operations of the FRFI. Its key responsibilities include:

- developing, for Board approval, the business model and associated objectives, strategies, plans, organizational structure and controls, and policies;
- developing and promoting (in conjunction with the Board) sound corporate governance practices, culture and ethics, which includes aligning employee compensation with the longer-term interests of the FRFI;
- executing and monitoring the achievement of Board-approved business objectives, strategies, and plans and the effectiveness of organizational structure and controls; and
- ensuring that the Board is kept well informed.

Board

The Board is responsible for providing stewardship and oversight of management and operations of the entire FRFI. Its key responsibilities include:

- guiding, reviewing and approving the business model and associated objectives, strategies and plans;
- reviewing and approving corporate risk policy including overall risk appetite and tolerance;
- ensuring that Senior Management is qualified and competent;

- reviewing and approving organizational and procedural controls;
- ensuring that principal risks are identified and appropriately managed;
- ensuring that compensation for employees, Senior Management and the Board is aligned with the longer term interests of the FRFI;
- reviewing and approving policies for major activities; and
- providing for an independent assessment of management controls.

OVERALL RATINGS

STRONG

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function exceed what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function has consistently demonstrated highly effective performance. The function's characteristics and performance are superior to sound industry practices.

ACCEPTABLE

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function meet what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function's performance has been effective. The function's characteristics and performance meet sound industry practices.

NEEDS IMPROVEMENT

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function generally meet what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI, but there are some significant areas that require improvement. The function's performance has generally been effective, but there are some significant areas where effectiveness needs to be improved. The areas needing improvement are not serious enough to cause prudential concerns if addressed in a timely manner. The function's characteristics and/or performance do not consistently meet sound industry practices.

WEAK

The characteristics (e.g., mandate, organization structure, resources, methodologies, practices) of the function are not, in a material way, what is considered necessary, given the nature, scope, complexity, and risk profile of the FRFI. The function's performance has demonstrated serious instances where effectiveness needs to be improved through immediate action. The function's characteristics and/or performance often do not meet sound industry practices.

APPENDIX C – TYPICAL NET RISK RATINGS

The chart below shows typical net risk ratings for combinations of inherent risk and QRM ratings.

Aggregate Quality of Risk Management for a Significant Activity	Level of Inherent Risk for a Significant Activity			
	Low	Moderate	Above Average	High
	Net Risk Assessment			
Strong	Low	Low	Moderate	Above Average
Acceptable	Low	Moderate	Above Average	High
Needs Improvement	Moderate	Above Average	High	High
Weak	Above Average	High	High	High

APPENDIX D – RISK MATRIX

Significant Activities	Inherent Risks						Quality of Risk Management								Net Risk	Direction of Risk	Importance
	Credit	Market	Insurance	Operational	Regulatory Compliance	Strategic	Operational Management	Financial	Compliance	Actuarial	Risk Management	Internal Audit	Senior Management	Board			
Activity 1																	
Activity 2																	
Activity 3																	
Etc.																	
Overall Rating																	

	Rating	Direction	Time Frame
Earnings			
Capital			
Liquidity			
Composite Risk			

Intervention Rating	

APPENDIX E – ALIGNMENT BETWEEN COMPOSITE RISK RATINGS AND INTERVENTION RATINGS

Composite Risk Rating	Intervention Rating
Low	0 Normal
Moderate	0 Normal
	1 Early warning
Above Average	1 Early warning
	2 Risk to financial viability or solvency
High	2 Risk to financial viability or solvency
	3 Future financial viability in serious doubt
	4 Non-viable/insolvency imminent

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Office of the Superintendent of Financial Institutions Canada, **Quarterly Sample Return**, 2020, Approved by the Canadian Council of Insurance Regulators — P&C-1Q, pp. 20.10, 20.20, 20.30, 20.42, 20.45, 20.54, 30.61, 30.62, 30.64, 30.66, 30.71, 30.73, 30.75, 30.77, 30.79, 40.07, 60.30, 70.60, 70.61, and 80.10.

Candidates may wish to review illustrations of sample Annual Return schedules (please use the link provided on the CAS Web Site). These illustrations are for information only and will not be directly tested.

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Office of the Superintendent of Financial Institutions Canada, **Annual Supplement**, 2019, Approved by the Canadian Council of Insurance Regulators — P&C-1A, pp. 10.60, 60.40, and 60.41.

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GUIDE TO COMPENSATION PLAN FOR PROPERTY AND CASUALTY INSURERS

May 2010

The compensation plan for property and casualty insurers (the "Plan") funded by property and casualty insurance companies resulted from extensive negotiations that took place with the provincial and federal Superintendents of Insurance over a period of five years and is designed to come into operation on the insolvency of a property and casualty insurer. The details of the Plan having been agreed upon by the Superintendents, the corporation which administers the compensation arrangements was incorporated as a federal non-profit corporation in 1988. Its name is the Property and Casualty Insurance Compensation Corporation/Societe d'indemnisation en matière d'assurances IARD ("PACICC"). Prior to PACICC entering into agreements with each of the provinces and territories, it was necessary to have each provincial and territorial Superintendent agree with PACICC on "prudential criteria" i.e. solvency standards to be imposed on all P&C insurers in his or her jurisdiction. The Plan has been in effect country-wide since 1989.

The following sections describe the main features of the Plan.

1. The Plan

The Plan is designed to provide a reasonable level of recovery for claims of policyholders under most policies issued by property and casualty insurance companies. The life insurance industry has a similar plan for life insurers which are therefore excluded from the Plan. Also excluded, because of their distinctive characteristics are aircraft, credit, crop, directors' and officers', employer's liability, certain errors and omissions (medical malpractice is not excluded), fidelity, financial guarantee, marine, mortgage, surety and title insurance. Automobile insurance in Manitoba and Saskatchewan is excluded, as are claims for bodily injury arising from automobile accidents occurring in Quebec for which compensation is available from the Société d'assurance automobile du Quebec. However, government-owned insurers otherwise participate in the Plan. Accident and Sickness Insurance is protected by the Plan, if the insurer writes it and also writes one or more classes of general insurance; if the insurer writes A and S insurance only, or A and S and Life insurance, the life insurance industry plan applies. Notwithstanding these exclusions, the Plan covers most claims under most P&C insurance policies.

The Plan, to begin with, assumed no liability for unearned premiums whatsoever but for insolvencies occurring after 1996, it now responds to claims for unearned premiums. This is limited, however, to 70% of a maximum unearned premium of $1,000 so that,effectively, the most PACICC will pay in respect of a claim for unearned premiums is $700. To take an example, if your policy period is January 1 to December 31 and a winding-up order is made in respect of your insurer on May 31, that means, in effect, that the premium for the period January 1 to May 31 has been earned (your insurance has been on risk for that period) and the premium for the period June 1 to December 31 (7 months) is unearned. If your premium was $960, your claim for unearned premium is 7/12's of $960 i.e. $560. PACICC would pay 70% x $560.00=$392.

2. Initiation of the Plan

The Plan is administered by PACICC, a non-profit corporation incorporated under Part II of the Canada Corporations Act. All participating insurance companies are members of PACICC. A participating insurance company is a company licensed in a participating jurisdiction to sell any of the classes of insurance for which PACICC provides protection. Those jurisdictions enacting legislation relating to the Plan have provided for exemptions for e.g. reinsurers, farm mutuals, and reciprocals. Some of the jurisdictions have enacted appropriate legislation that deems all licensed property and casualty insurers to be members of PACICC and to be bound by its By-laws and Memorandum of Operation, including commitments to make their appropriate contributions to assessments. Others have enacted legislation or regulations making it a condition of being licensed that the property and casualty insurer enter into a contract of membership with PACICC that imposes similar obligations on the insurer. All Provinces and Territories have the necessary legislation in place.

While a company is licensed in a participating jurisdiction it may not withdraw from membership in PACICC and PACICC may not terminate its membership. The company's membership is, however, deemed to be terminated six months after cancellation of its licence by a jurisdiction, if that cancellation results in its not being licensed in any participating jurisdiction to sell any of the classes of insurance protected by PACICC.

In addition, as mentioned earlier, agreement had to be reached with the Superintendents of Insurance on prudential criteria and before amending prudential criteria in future, the jurisdiction concerned is required to consult with PACICC.

3. Operation of PACICC

PACICC is administered by a Board of Directors elected by its members i.e. participating insurers. It operates in close liaison with the Federal Superintendent of Financial Institutions and with Superintendents of Insurance or similar insurance regulatory authorities of participating jurisdictions. The Superintendents are not official members of the Board of Directors of PACICC but they may designate representatives to participate in Board discussions on a non-voting basis. Also, the Board has the right to appoint an advisory committee as to any specific insolvency and to delegate responsibilities to that committee; again, the Superintendents are entitled to designate non-voting representatives to any advisory committee.

The obligations of PACICC come into operation only upon a formal winding-up order under the federal Winding-Up and Restructuring Act. Until that occurs, PACICC has no financial responsibility in connection with an insurer.

4. Procedure in an Insolvency

Immediately after the winding-up order is made, representatives of PACICC consult with the court appointed liquidator to arrive at an appropriate working relationship. Indeed, preliminary consultations are held on an informal basis prior to the appointment although, as mentioned earlier, PACICC is not called upon to make any payments until after the winding-up order has been made.

PACICC has discussions with the relevant Superintendent of Insurance as to pre-selecting the liquidator or the agent of a liquidator, when an insolvency is imminent. The major accounting firms tend to be invited to take part in a tender process, although the firm that has been the auditor of the insolvent insurer is excluded from consideration. We have also developed a model wind-up order (in conjunction with the liquidators) and we find the liquidators invariably use it.

PACICC's Memorandum of Operation is sufficiently flexible to allow for a variety of factual situations that may arise and to permit appropriate working arrangements to be made.

Under current arrangements, the procedures established by the liquidator to settle the quantum of policyholder claims against the insolvent insurer are reviewed with PACICC in order that PACICC is prepared to accept and act upon the settlements reached by the liquidator's adjusters. Where consensus is reached as to the procedures, it is possible for PACICC simply to make payment to a policyholder after the quantum of his claim is settled with the liquidator. PACICC is not, however, obligated to do this - it may review the settlement to verify that the amount is appropriate.

PACICC has discretion to make payments to third parties and in such cases the model wind-up order deems the policyholder has transferred her/his rights against the insurer to PACICC. PACICC does not stand in the shoes of the liquidator but it is generally the

case that the co-operation between them is such that PACICC requires minimal staff resources.

5. Payment of Claims

The maximum recovery from PACICC is currently $250,000 for all covered policies (with the exception of personal property policies, where the maximum recovery is $300,000) in respect of all claims arising from policies issued to a single named insured by the insolvent insurer and which arise from a single occurrence. The actual amount to which a particular insured (or third party claiming through the insured) is entitled is determined by first calculating what the aggregate of his entitlement is under all applicable provisions of his or her policy or policies (such as deductibles, co-insurance, etc.) and secondly, determining the lesser of that amount and the PACICC limit.

For example, an automobile insurance policyholder with a policy deductible of $250 and a claim of $300,000 can look to PACICC for $250,000; a policyholder with a claim of $175,000 and with a policy deductible of $500 can look to PACICC for $174,500. The purpose of the Plan, therefore, is to provide policyholders with basic compensation. It is not designed to provide full protection in all cases.

Because all claims by a policyholder arising out of a single occurrence are aggregated, it is sometimes necessary for PACICC to establish priorities as to how a particular payment is to be applied. You may, for example, as a result of your negligence in driving your vehicle, be sued by, say, 3 passengers in your vehicle, and by 2 occupants of the other vehicle.

6. Other Arrangements as to Plan Payments

So that the Plan can operate effectively, other limitations are necessary as to the claims that PACICC will pay. Claims asserted by persons who have a special relationship with the insolvent insurer may be excluded by the Board of PACICC. Further, in extreme cases, a major insolvency might trigger the limit (see paragraph 8 following) on the extent to which a participating insurer can be called upon in any year to pay assessments to PACICC; in such case it may be necessary for the Board of PACICC to make decisions that will stretch out the time over which claims will be met by PACICC.

Subject to these limitations, the Plan applies to any claims that arise under insurance policies described in paragraph 1 either prior to the winding-up order or within such time thereafter as the PACICC Board may determine. The extended time period is intended to give ample time to brokers and others to notify policyholders of the need to put in place other insurance arrangements.

7. Recovery by PACICC of Amounts Paid

A key principle of the Plan is that any amounts paid by PACICC are recovered by PACICC before any additional payment is received by the policyholder as to that claim. To the extent that resources to pay a particular claim are available from the insolvent insurer (or through third party claims) payments by PACICC towards that claim would therefore be of an interim nature.

Before a payment is made to or on behalf of a policyholder, the policyholder is required to certify that he or she has exhausted any available claim against any solvent insurer with whom he has a policy that covers the same loss. Further, he or she is required to assign to PACICC all of his or her rights against the insolvent insurer that arise under the particular policy. This is normally dealt with in the wind-up order. The consequence of this assignment for an insured with a claim of $300,000, as to which PACICC pays $250,000, would be that the insured would receive no participation in a distribution of $150,000 made by the liquidator of the insolvent insurer; if the distribution was $275,000, the insured would receive $25,000.

PACICC is also entitled to first priority against amounts received by the insured from third parties with respect to the loss for which PACICC provided payment.

8. Assessment Process

PACICC recovers the amount that it advanced to and on behalf of the policyholders of an insolvent insurer through assessments levied against particular participating insurers licenced in the participating jurisdictions in which the insolvent insurer was writing business. Separate assessments are made in respect of each participating jurisdiction in which the insolvent insurer wrote business. These assessments are limited to the shortfall between amounts advanced by PACICC and amounts recovered by it from the insolvent insurer and third parties.

To ensure that PACICC is in a position to respond to the financial demands that may be made on it, provisions were added to its Memorandum of Operation in 1996 to provide for some pre-insolvency funding. In each of the years 1998, 1999 and 2000 a special levy was made on companies to establish a Compensation Fund of approximately $30 million. Investment income is being accumulated to the Fund. The value of the Fund was approximately $43 million as of June 2009. (The Fund value is publicly disclosed at each calendar year-end in PACICC's Annual Report).

A particular participating insurer is assessed as to each participating jurisdiction in which it is licenced and in which the insolvent insurer was also licenced in accordance with the following formula:

$$A = B \times \frac{C}{D}$$

Where:

"A" is the assessment to be borne by the particular participating insurer in respect of the relevant participating jurisdiction;

"B" is the total amount being assessed against all participating insurers in respect of the relevant participating jurisdiction;

"C" is the total direct written premiums for protected policies of the particular participating insurer in respect of the relevant participating jurisdiction; and

"D" is the total direct written premiums for protected policies of all participating insurers in respect of the relevant participating jurisdiction.

For the purpose of determining the premium income of insurers, PACICC relies on the reports which insurers are required to file with the relevant Superintendents of Insurance. The maximum annual levy that an insurer may be asked to pay in a particular jurisdiction is 1.5% of its direct written premium in that jurisdiction. The Board of Directors of PACICC, in practice, makes a general assessment in respect of each participating jurisdiction early in the course of a particular insolvency, reflecting the maximum exposure that it anticipates under the particular insolvency, subsequently levying draws on that assessment as the need for funds has arisen. The Board may also choose to have PACICC borrow money from its Compensation Fund and delay implementing an assessment until it is better able to estimate PACICC's exposure. The money borrowed from the Fund must be fully repaid with interest, with the relevant insurers being assessed for the appropriate amount.

The Board of Directors is also entitled to levy administrative assessments for the administration expenses of PACICC. In 2009, the fee varied from $1,850 for the smallest companies to $9,200 for the largest companies.

If the making of Compensation Payments is likely to cause financial difficulty to the property and casualty industry or to PACICC, the Corporation is required to have discussions with the regulators with a view to modifying the compensation arrangements and possibly to defer making payments, if this is appropriate, while the discussions are continuing.

9. Conclusion

The Plan protects policyholders who are in need of protection against the more serious results of the insolvency of a property and casualty insurer without exposing the general insurance industry to an unlimited liability for all claims against an insolvent insurer. Prior recovery of amounts advanced by PACICC from any other recoveries of the insured against the same claim is consistent with this approach.

It has been proved that the plan arrangements can operate effectively and efficiently in the context of the established degree of co-operation among Superintendents of Insurance, liquidators and the insurance industry in insolvencies.

Alex Kennedy
December 2003 (and updated as of June 2009)

(Alex Kennedy was Vice-President, Secretary-Treasurer and Counsel to PACICC from its inception in 1988 to 1998. Alex served as PACICC’s President and Chief Executive Officer from 1998 to 2003)